



Department of  
**Transport**

Recreational Skipper's Ticket

# Workbook

Sixth Edition



# Where to get assessed?

## Assessment Locations

The Department has established a network of Authorised Providers that conduct RST assessment services throughout the state. All Authorised Providers have the endorsement and approval of the Department to provide RST assessment services. No one Authorised Provider is favoured over another. A list of these Providers and the regions that they service can be found on the Department's website:

***[www.transport.wa.gov.au/imagine/rst](http://www.transport.wa.gov.au/imagine/rst)***

Contact an Authorised Provider that provides assessment services for your region to obtain details on assessment locations, times and prices.

The Department does not regulate the assessment fee, prices vary, so shop around for the deal that best suits your needs.



For more information please visit our website [www.transport.wa.gov.au/imagine/rst](http://www.transport.wa.gov.au/imagine/rst)  
or phone the RST information line on 1300 863 308

## Welcome to a safer future

To make Western Australia's waterways safer, a minimum competency standard has been introduced for recreational skippers.

Developed by the Department of Transport (DoT), the agency responsible for marine safety in WA, the Recreational Skipper's Ticket (RST) will ensure that people in charge of recreational vessels have the minimum skills and knowledge to protect themselves, their passengers, and to share the waterways safely with others.

The RST is a qualification based on a set of national marine safety competencies that a skipper must demonstrate to an authorised assessor. The assessment of these competencies will be in two sections: theory and practical. Depending on your prior qualifications, you may be exempt from the assessment.

This workbook contains all the material that you will need to know to gain an RST:

- the enrolment and assessment processes;
- the theoretical components (with sample questions to test your knowledge); and
- the practical component skills you will need to demonstrate.

We hope that you find this workbook useful and informative and trust that the RST process will encourage you to continue your pursuit for boating knowledge. The greater the depth of your knowledge, the more confident and competent you will be in your chosen recreational pursuit.



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### The Recreational Skipper's Ticket

The RST is a qualification based on a set of national marine safety competencies that a skipper must demonstrate to an authorised assessor.

The assessment of these competencies will be in two sections: theory and practical.

Depending on your prior qualifications, you may be exempt from the assessment. A list of recognised qualifications is available on our website [www.transport.wa.gov.au/imagine/rst](http://www.transport.wa.gov.au/imagine/rst)

#### How do I get one?

To obtain an RST you must have your skills assessed by an RST authorised assessor.

The assessments will test your skills and knowledge in the following areas:

#### Theoretical

A 30 question multiple-choice paper (using questions of a similar standard to the samples in this workbook) will assess your knowledge and understanding of:

- rules and regulations;
- international collision regulations;
- buoyage and other navigation aids;
- navigation lights;
- maintenance of vessel, motor and equipment;
- safety equipment required to be carried;
- trip planning, and responsibilities to passengers; and
- distress signals, response to distress and other emergencies.

A range of quizzes to help you prepare for the assessment are available on our website [www.transport.wa.gov.au/imagine/rst](http://www.transport.wa.gov.au/imagine/rst)



On passing your RST assessment you will receive an RST Interim Certificate.

#### Practical

The assessment effectively requires you to demonstrate a well-conducted boating trip, including preparation and vessel manoeuvring. Specific tasks you will be assessed on include:

- throughout the assessment, operating within the marine safety rules and regulations;
- checking the condition of a vessel's berthing and mooring equipment and securing the vessels;
- conducting a safety briefing for all on board;
- preparing and starting the motor safely;
- logging a voyage plan;
- safely departing a berth;
- conducting a retrieval of a simulated man overboard operation;
- steering a steady course with the aid of a transit;
- performing a controlled stop;
- returning to a berth and securing the vessel; and
- logging off.

#### Who has to have one?

The person in charge of a recreational vessel fitted with a motor greater than 4.5 kilowatts (6 HP) (RST vessel) must hold a RST.

#### What are the age limits?

People of 14 years and older may hold an RST; however if you are between 14 and 16 years of age you may only operate an RST vessel, as the person in charge, during daylight hours and at a maximum speed of 8 knots.

#### Who does the assessing?

You will need to book in for assessment through an RST authorised provider. DoT maintains a list of RST authorised providers that can be viewed on our website: [www.transport.wa.gov.au/imagine/rst](http://www.transport.wa.gov.au/imagine/rst)

**What must I provide for the assessor?**

Before assessment can take place, you must complete an RST application form and provide the assessor with certain declarations (eyesight and medical) and proof of identity (POI).

**Eyesight declaration**

To hold an RST you must have a minimum corrected vision standard of at least 6/12, in at least one eye.

A valid Australian motor driver's licence will be accepted as proof of adequate eyesight to be in charge of a recreational powerboat.

If you don't hold a recognised Australian motor driver's licence you will need to have a medical practitioner, qualified nurse or optometrist complete the separate eyesight assessment form. The form is available from your authorised provider or can be downloaded from our website:

[www.transport.wa.gov.au/imarine/rst](http://www.transport.wa.gov.au/imarine/rst)

**Medical fitness declaration**

A serious medical condition could conceivably affect your ability to safely operate a recreational vessel. A self-declared medical statement is required before obtaining the RST.

You must advise DoT if you suffer from any physical or mental condition that could affect your ability to safely operate a motor vessel. This could include:

- epilepsy, fits, giddiness, fainting, seizures;
- heart disease;
- high/low blood pressure;
- arthritis;
- type 1 diabetes; or
- any other physical or mental disability that could affect your ability to safely operate a motor vessel.

If you suffer from any of the above listed conditions and you believe that it could affect your ability to operate a motor vessel safely, you must have a medical practitioner complete a medical declaration form on your behalf. The form is available from your authorised provider or can be downloaded from our website:

[www.transport.wa.gov.au/imarine/rst](http://www.transport.wa.gov.au/imarine/rst)

**Proof of identity requirements**

As part of the enrolment process, POI needs to be established. Applicants must show POI to verify their name and signature.

A valid photographic Australian driver's licence will satisfy the POI requirements. People without a driver's licence will need to provide POI documents.

**POI documents**

To satisfy these POI requirements, you must provide either:

- one full POI document; or
- one primary plus one secondary POI document.

You must provide the original documents or certified copies. At least one document must show your signature.

**Acceptable full POI documents – no other proof required**

You can prove your identity with any one of the following current full POI documents:

- photographic driver's licence issued within Australia;
- Australian passport (not expired more than two years);
- document of identity issued by the passport office;
- Australian Defence Force photographic identity card;
- Federal or WA police officer photographic identity card;
- Police Warrant Card;
- Proof of age card issued by DoT;
- Marine Certificate of Competency carrying a photograph of the holder; or
- WA photograph (security) licence issued by or cleared with the WA Police Service.

If you have changed your name, you must provide documentary evidence that clearly shows the link between your birth name and your current name.

If you cannot provide full POI documents you must provide one primary AND one secondary POI document.

### Acceptable forms of primary identification are:

- Current Australian or Overseas passport;
- Australian citizenship or naturalisation document or immigration papers issued by the Department of Immigration and Multicultural and Indigenous Affairs, and local government and ethnic affairs documents issued by a passport office;
- WA Firearm Licence;
- a birth certificate, or an extract of the birth certificate (must be a certified copy from the issuing body);
- a consular photo identity card issued by the Department of Foreign Affairs and Trade;
- Certificate of Aboriginality issued by an organisation (eg Land Council) recognised by the Aboriginal and Torres Strait Islander Commission;
- a photographic licence issued by an Australian driver licensing authority (which can have expired within the last two years);
- a security licence (which can have expired within the last two years); or a
- WA Motor Driver's Licence Learners Permit;
- evidence of resident status issued by the Department of immigration.

### Acceptable forms of secondary identification are:

- a current entitlement card issued by a Commonwealth government department (for example, a Medicare card);
- a current card or account card from a bank, building society or credit union;
- a passbook or account statement from a bank, building society or credit union (not more than 12 months old);
- a telephone, gas or electricity account (not more than 12 months old);
- a water or local rate notice or land valuation notice (not more than two years old);
- an electoral card or other evidence of enrolment (not more than two years old);
- armed services discharge papers (not more than two years old);
- a certificate or statement of accomplishment or enrolment from a recognised educational institution; and
- a letter (not more than 12 months old) from the principal of a recognised educational institution.

### Letter of consent

If you're under 18, you must have a letter of consent signed by your parent or legal guardian prior to assessment (See Appendix 1, page 104).

**Exemptions for prior qualifications**

If you hold an approved commercial marine qualification (not engineering) issued by DoT you will not be required to undergo any further assessment to receive an RST. However, you must hold an RST to operate an RST vessel.

Upon request DoT will issue you an RST application form, once the form has been completed and returned to DoT an RST will be issued.

**Skills Recognition**

If you hold a current/valid interstate boat driver's licence or an acceptable qualification that is listed on DoT's website, [www.transport.wa.gov.au/imatest/rst](http://www.transport.wa.gov.au/imatest/rst) or an approved commercial marine qualification (not engineering) issued outside of WA you may apply for an RST through the Skills Recognition scheme. This will require submitting your qualification to an authorised provider for verification.

A list of authorised providers can be found on our website: [www.transport.wa.gov.au/imatest/rst](http://www.transport.wa.gov.au/imatest/rst)

**Full assessment**

If you don't qualify for the Skills Recognition you will need to complete both the theory and the practical assessments.

The theoretical assessment consists of 30 multiple-choice questions. You will need to get at least 24 correct before progressing to the practical assessment.

The practical assessment will take about 60 minutes and requires you to demonstrate competency for each of the 11 practical tasks.

Once you have successfully completed the theoretical assessment and demonstrated the practical tasks to DoT's standards your assessor will issue you a Receipt of Completion certificate. Once your records are approved and processed by DoT an RST card will be sent to your home address.

**Where can I be assessed?**

A network of RST authorised providers and their assessors has been established providing good coverage throughout the State. A list of providers can be found on DoT's website: [www.transport.wa.gov.au/imatest/rst](http://www.transport.wa.gov.au/imatest/rst)

**How much will it cost?**

The RST authorised assessor will charge you a fee for assessment. This fee is not regulated by DoT so it would be wise to shop around for the best deal.

You may re-sit the assessment as many times as you require; however, you may be required to pay the assessment fee on each attempt.

**Must I attend a training course?**

No, the only requirement is to pass the theory and practical assessments. Whether or not to attend a training course is your choice.

**Will it be recognised in other states?**

All states require that boat drivers prove themselves to a common set of standards, so each state's qualification will be recognised in other states the same way a car driver's licence is. When visiting other states always check with the local marine authority to ensure you meet all of their requirements.

**Interstate or overseas ticket valid for three months**

If you hold a valid/current interstate or foreign skipper's ticket, recognised by DoT and listed on DoT's website, [www.transport.wa.gov.au/imatest/rst](http://www.transport.wa.gov.au/imatest/rst) and you enter WA, as a visitor or with the intention of permanently residing in the State, it will be taken that you hold a RST until three months have elapsed since you entered the State.

After that period you must apply for an RST, under the Skills Recognition scheme, if you wish to continue operating an RST vessel in this State.



## Rules and regulations

WA's waters keep getting busier, and a great range of activities share the limited space. To ensure the safety of all boaters, there are rules and regulations.

At the end of this section, skippers will have a good knowledge of the specific rules and regulations that apply within the navigable waters of WA.

### Responsibilities and duty of care

Long before the modern expression 'duty of care' was invented, the concept was accepted as the skipper's job. It does not matter whether you are the master of a large ship or skipper of your own trailer boat – you are responsible for the safety of your vessel, crew and passengers; you must not endanger any other vessel; and you must be ready to assist others who need help.

### Marine Infringements and penalties

There are a variety of penalties that can be imposed on a skipper who commits a marine offence. This may include fines or the suspension or cancellation of their RST.

### Marine Safety signs

All special-use areas – this includes water skiing, boating prohibited and swimming prohibited – have signs at the limits of the areas. These must be strictly obeyed. At the launching ramps near ski areas there are also signs explaining the rules for that particular area, hours of operation, direction of the ski circuit, etc.

Areas subject to speed limits will have signs depicting the maximum speed limit for the area. Make yourself familiar with these requirements.



Speed restricted areas are marked by signs.

## Age requirements and restrictions for skippers

### RST exempt vessel

A person in charge of a recreational vessel with a motor of 4.5 kilowatts (6hp) **or less** (RST exempt vessel) **is not required** to hold an RST.

The following age restriction applies:

**Under 10 years:** may not drive a motor boat.

### RST vessel

The person in charge of a recreational vessel with a motor **greater than** 4.5 kilowatts (6hp) (RST vessel) must be at least 14 years old and hold an RST.

The following age restrictions apply:

**14 – 16 years:** restricted to operating during daylight hours at a speed less than 8 knots.

Persons over 10 years of age that do not hold an RST, may drive a RST vessel if they are under the direct supervision (by a person on board) who is at least 18 years of age and is the holder of an RST.

### Change of address or name

The holder of an RST must notify DoT within 21 days of a change of name or address. The form can be downloaded from our website: [www.transport.wa.gov.au/imate/rst](http://www.transport.wa.gov.au/imate/rst)

### Identifying the skipper

You must carry your RST and produce it for inspection when requested to by a WA Marine Officer, a member of the Police or other authorised officers.

### Mooring areas

There are many sheltered places in WA where boat owners can moor their vessels, however you need to seek authorisation from DoT before you can lay a mooring in any navigable water.

Moorings within Mooring Control Areas, (Rottnest and the Swan and Canning rivers are examples) must be installed and maintained to a specified standard.

You must have approval from DoT or the local authority to use a mooring within a Mooring Control Area.

Only one vessel at a time is permitted on a mooring, and the vessel must be no larger than the mooring was designed/approved for.

For more information about moorings visit our website: [www.transport.wa.gov.au/imate/rst](http://www.transport.wa.gov.au/imate/rst)

### Nuisance or damage

You are not allowed to travel at a speed or in a way that causes a nuisance or damage to people or other vessels, or causes damage or erosion to the shore or property.

### General speed limit restrictions

Without the approval of DoT you may not drive a powerboat at over 8 knots:

- through an arch of a bridge (unless water skiing is specifically permitted for a bridge);
- in or through a mooring area;
- in any water having a depth of less than 3 metres;
- within 15 metres of a vessel underway; and
- within 45 metres of:
  - a moored vessel;
  - a person in the water;
  - a jetty or wharf; or
  - a river bank or low water mark.

### Obstruction of navigation aids, channels and leads

Crab nets, cray pots, fishing nets, marker buoys – or any other buoyed objects – are not allowed in any channel, fairway or passage without the permission of DoT. Anchoring or mooring is also prohibited in these areas unless you are in distress.

You must not secure a vessel to a beacon or other navigation aid.



Tying up to navigational markers is prohibited.

### Limits for small vessels

Vessels under 3.75 metres in length (including personal water craft) may not go further to sea than five nautical miles from the mainland.

### Accident / incident reporting

When an accident results in serious injury or death, or the vessel has been damaged enough to make it unseaworthy or unsafe, the owner or skipper must report full particulars of the incident to DoT within seven days.

You can pick up a special form from DoT's offices, download it from our website: [www.transport.wa.gov.au/imate/rst](http://www.transport.wa.gov.au/imate/rst) or phone 1300 863 308 for one to be sent to you.

Marine incidents causing serious injury or damage must be reported to DoT.

### Assisting people in distress

All boaters have a legal obligation to assist people in distress unless:

- they are unable to – perhaps the call for assistance was from too far away;
- assistance is not required – perhaps sea rescue has taken over; or
- the circumstances make it too dangerous.

If an accident occurs nearby, you must assist where possible, provided it does not seriously endanger you or your passengers.



## Diving regulations

### Diving flag

A boat with people diving from it must carry the appropriate day or night signals. The daytime signal for divers is an International Code Flag "A". The flag must be at least 750mm long and 600mm wide. Divers operating without a vessel, for example from a jetty, must also display the International Code Flag "A" of the same minimum size.



The Code "A" dive flag must be visible for 360°.

You can choose to show this flag from a buoy, in which case the minimum flag size must be 300mm in length and 200mm in width. The flag must be clearly visible to all vessels operating in the vicinity.

By night the diver's vessel, as well as appropriate lights such as an anchor light, must show three all-round lights in a vertical line: the top and bottom lights red, the middle one white.

People engaged in night diving without a vessel must display a yellow-orange flashing light that can be seen from a minimum distance of 200 metres.

### Vessels to keep clear of diving signals

All vessels must keep at least 50 metres clear of boats, buoys or areas showing diving signals.

Where it is not possible to keep 50 metres clear, the approaching vessel should travel at the slowest possible speed and keep a good lookout for people in the water.

For further information about diving, please read DoT's, *Caution Diver Below* brochure, which is available on our website: [www.transport.wa.gov.au/imagine/rst](http://www.transport.wa.gov.au/imagine/rst)

## Water skiing

'Water skiing' means being towed over water, at a speed of 8 knots or more, by a motor boat, so as to be supported on the surface by a ski or skis, an aquaplane or other apparatus, or the feet. You may only ski in gazetted water ski areas.

The driver of a vessel engaged in water skiing must be at least 17 years of age and hold an RST. The driver must keep a proper lookout at all times and should not be watching the skier. The driver must also be accompanied by an observer who is at least 14 years old. The observer must be on board and watching the skier at all times.

Vessels engaged in water skiing must still comply with the international prevention of collision regulations.

At the launching ramps near ski areas there are signs that explain the rules for each particular area, such as the hours of operation, the direction of the ski circuit, etc.

For further information about water skiing, please read DoT's, *Ski Safe* brochure, which is available on our website: [www.transport.wa.gov.au/imagine/rst](http://www.transport.wa.gov.au/imagine/rst)

## Personal water craft





Personal watercraft (PWC) – often called jet skis – are craft propelled by an inboard motor powering a water jet pump. The operator sits, stands or kneels and uses handlebars to steer it.

PWC are powerboats as far as the rules are concerned. This means there are rules for the age of drivers, the distance offshore they can operate, equipment to be carried, speed limits and so on. There are, however, a few extra rules and a few concessions which bear in mind the PWC limitations.

### Safety equipment for PWC

Every person on board a PWC must wear a personal flotation device (PFD) at all times:

- Within protected waters or 400 metres of the shore in unprotected waters it can be a PFD Type 1, 2, or 3.
- Between 400 metres and two nautical miles from shore in unprotected waters a PFD Type 1 or AS 4758 - Level 100 (or higher) must be worn. You must also carry an inshore distress flare kit that is in a serviceable condition and in date.

Department of Transport <b>Personal Water Craft (PWC) Safety Equipment</b>		Protected Waters lakes, rivers, inlets and estuaries except Lake Argyle	0 – 2 Nautical Miles from the mainland shore	2 – 5 Nautical Miles from the mainland shore
	<b>Recreational Skipper's Ticket</b> The skipper of a recreational vessel, powered by a motor greater than 4.5kw (6 hp) must hold an RST. <b>Age Restrictions Apply:</b> Persons under 16 are restricted to a maximum speed of 8 knots.	✓	✓	✓
	<b>Lifejackets</b> A lifejacket bearing the label PFD Type 1, 2 or 3 must be worn by every person onboard if operating within protected waters or within 400 metres of the shore in unprotected waters. A PFD Type 1 or the Australian Standard AS 1512 or AS 4758 - Level 100 (or higher) must be worn by every person onboard if operating beyond 400 metres of the shore in unprotected waters.	✓	✓	✓
	<b>Red and Orange Flares</b> At least two hand held red flares and two hand held orange flares must be carried if operating more than 400 metres from the shore. Two parachute flares may be carried in lieu of the two hand held red flares and a smoke canister may be carried in lieu of the smoke flares.	—	✓	✓
	<b>EPIRB</b> A 406 MHz EPIRB registered with AMSA bearing the standard AS/NZS 4280.1 must be carried if proceeding more than 2 nautical miles from the mainland shore or more than 400 metres from an island located more than 2 nautical miles from the mainland shore.	—	—	✓

PWC safety equipment sticker is available for DoT offices

- Between two and five nautical miles, a PFD Type 1 or AS 4758 - Level 100 (or higher) must be worn. You must also carry an inshore distress flare kit and an approved EPIRB.
- Vessels under 3.75 metres are not permitted more than five nautical miles off shore.

### Freestyle driving, wake and wave jumping

Freestyle driving is driving a PWC in such a way that the driver of another vessel would be unable to predict your course and speed in order to avoid a collision with you.

Wave and wake jumping is driving your PWC over a wave or swell with the aim of becoming airborne. The wave or the swell may be formed naturally or by the passage of a vessel.

Freestyle driving and wake jumping is prohibited:

- within any speed restricted area;
- within 30 metres of another PWC; and
- within 50 metres of another vessel or person in the water.

### PWC in ski areas

PWC are prohibited in most water ski areas unless they are being used to tow water skiers.

PWC are permitted to operate in most of the large offshore water ski areas such as Warnbro, Cockburn Sound and Geographe Bay. It is important to check the signs at the launching ramp for any relevant information before using your PWC in and unfamiliar area.

For further information about PWCs, please read DoT's, *Ride Safe* brochure, which is available on our website: [www.transport.wa.gov.au/imagine/rst](http://www.transport.wa.gov.au/imagine/rst)

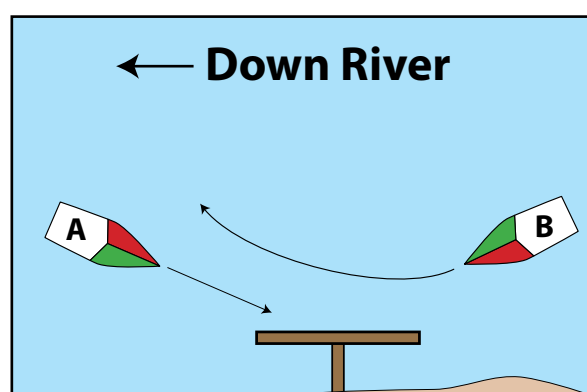
## Alcohol and drugs

It is a legal obligation that no person shall navigate or attempt to navigate a vessel while under the influence of alcohol or drugs. Alcohol is absorbed quickly into the blood and travels rapidly to all parts of the body. It affects your brain's ability to make judgments and process information. It also impairs your consciousness and vision.

The effect of alcohol may cause you to take more risks than you would normally. Remember, alcohol slows down your reaction time to marine hazards.

## Right of way at jetties

When two power boats approach the same public jetty from different directions, the vessel travelling down river must give way.



The vessel travelling down river "B" must give way to vessel travelling up river "A".

## Organised races, displays, regattas and aquatic sports

Permission from DoT is required to organise, promote or conduct a race, display or regatta involving any vessel or an exhibition of any form of aquatic sport, including water skiing in any navigable waters.

## Safety on board

Once a vessel is underway, everybody on board the vessel must keep all parts of their bodies within the limits of the hull.

## Enforcement officers

In WA, DoT, Department of Fisheries, Water Police and other government agencies administer the marine acts and regulations that apply to recreational boats and boaters. They regularly check vessels for registration and safety gear, as well as monitoring the behaviour of water users.

## Vessel Registration

### Vessels that must be registered

If your vessel has a motor, or is fitted for one, it must be registered with DoT and will be subject to an annual registration fee. If your vessel is currently registered in another state, you get three months grace after bringing it into WA. After that time, you must register it in this State.

### Exemptions from registration

The following recreational vessels do not have to be registered:

- yachts (un-powered and not fitted with an engine mount);
- canoes; and
- surf skis and other craft without motors.

### Tenders

A tender vessel to a larger vessel does not have to be registered provided it is:

- no more than 3.1 metres long;
- has a motor no bigger than 3.73kWp (5hp); and
- is used only as a lifeboat and for ship to shore transport.



*Tender vessels do not require registration but must display the numbers of the parent vessel.*

### Change of ownership details

The owner of a registered vessel must notify DoT within 15 days of any changes to the registered details of the vessel or the address of the owner.

**The seller** must notify DoT within seven days of selling the vessel.

**The buyer** must notify DoT within 15 days of buying the vessel.

### Placement of registration numbers

Numbers must be fixed as follows:

**Powerboats** – Midships on both sides of the hull where they are clearly visible – not under the flare of the bow – 150mm high x 25mm wide.



*Powerboats numbers must be placed midships on both sides of the hull.*

**Yachts** – On the side of the hull immediately forward of the transom – 50mm high x 12mm wide.



*Yacht numbers must be placed immediately forward of the transom.*

**Inflatable boats** – As for a powerboat or on boards hung over either side – 150mm high x 25mm wide.

**Tenders** – Must have its parent vessel's number displayed on each side of the boat forward of the transom – 50mm high x 12mm wide.

**PWC** - on both sides of the hull where they are clearly visible – 150mm high x 25mm wide.

### Placement of registration sticker

On all vessels, the registration sticker must be fixed on the port side of the vessel, adjacent to the registration number.

## Pollution and the environment

State and Commonwealth laws, based on international conventions, cover all kinds of marine pollution including rubbish, oil, plastics and sewage. Pollution is taken so seriously that the penalties can be up to \$200,000 for an individual and \$1,000,000 for companies.

### Rubbish

The pollution regulations relating to boating state that there is no dumping of:

- Oil or noxious substances or plastic anywhere. Plastics include synthetic ropes and synthetic fishing lines and nets.
- Floating rubbish within 25 nautical miles of the nearest land.
- Garbage including food wastes, paper products, rags, glass or metals within 12 nautical miles from the nearest land, or three nautical miles if the garbage has been passed through an approved grinder.



*Rubbish must be kept on board and returned to shore for disposal.*

### What you should do

You need to plan. Small vessels have to arrange to store garbage, waste or oily bilge water and noxious substances on board until they can be discharged responsibly when back in port. Larger vessels may operate far enough offshore to dispose of garbage and waste at sea, but no vessel can release waste oils, oily bilge or noxious substances anywhere at sea or in the inland waters of WA.

### Bilge

Check your bilges and keep them clean and dry. If an automatic bilge pump puts an oil and bilge water mix in the water it will land you in trouble.

Inspect fuel lines and seals regularly and ensure that oil leaks are dealt with quickly.

Fit a drip tray under the engines with drainage to a holding tank for disposal ashore.

Consider fitting high efficiency by-pass oil filters. These decrease the frequency of oil changes.

If you have engine oil leaks, consider placing oil absorbent/water repellent material in the bilge. This is not expensive.

### Refuelling

Refuelling is the most common time for spillage of fuel into the environment. The same procedure that guards against risk of fire during and after refuelling (detailed in the Emergencies Section, page 75) will also help prevent pollution.

In particular guard against overfilling by:

- knowing how much fuel you need to take (allowing space in the tank for expansion);
- not leaving the filling nozzle unattended; and
- listening for blow back from the tank breathers – you may need to slow the filling rate.

### Reporting spills and illegal dumping

Under WA law, the polluter must report spills of oil or noxious substances to DoT – and there are penalties for failing to do so.

The information needed is:

- when and where the incident occurred;
- name and registration number of the offending vessel;
- type and extent of pollution; and
- any other relevant information.

For further information or to report an incident phone: Oil Spill Response Coordination Unit (08) 9480 9924.



## Sewage

The discharge of sewage from vessels, especially at popular destinations, reduces water quality, creates a human health risk and is universally loathed aesthetically.

To limit the impact of sewage on our environment, the State Government has adopted a regulatory plan that establishes three sewage discharge zones based on the degree of risk to public health and/or the environment:

- areas of water where sewage discharge is completely prohibited for health and/or environmental reasons;
- areas where treated sewage discharge is acceptable; and
- areas, mostly well offshore, where untreated sewage can be discharged from vessels safely.

### Zone 1: No Discharge Zone

The discharge of sewage from vessels, treated or untreated, is prohibited in Zone 1.

The no discharge zone includes:

- marinas, yacht clubs, boat harbours and ports/maritime export facilities;
- most inland waters;
- designated areas of the Rottnest Island Marine Reserve;
- marine nature reserves and sanctuary zones within marine parks;
- designated parts of marine parks, marine management areas or fish habitat protection areas;
- within 500 metres of any aquaculture operation;
- within 100 metres of any recognised swimming area; and
- other designated areas of high environmental value.

### Zone 2: No discharge except for vessels with approved treatment systems

Sewage treated to an approved standard can be discharged in Zone 2.

The treated sewage discharge zone includes designated areas outside of Zone 1 such as:

- parts of estuaries, marine parks and fish habitat protection areas, where the dilution factor is deemed to be satisfactory;
- the remainder of the Rottnest Island Marine Reserve; and
- waters more than 20 metres from a stationary vessel or person in the water.

### Standard for treated sewage

The Department of Health has responsibility for approving sewage treatment devices that operate to an acceptable standard for discharge in this zone.

The discharge specification is:

- Thermo tolerant coliforms – less than 125/100ml.
- Solids – no visible floating solids.

### Zone 3: Open Zone

Untreated sewage may be discharged from vessels within Zone 3.

Zone 3 comprises all State Waters except:

- those waters which are within Zone 1 or Zone 2;
- waters within 500 metres of land; and
- waters within 100 metres of a stationary vessel or person in the water.

Boat owners and operators must adopt on board sewage management measures if sewage is likely to be generated. This could be a portable toilet, holding tank or a sewage treatment system.

It is important to check with the relevant authority to find out the zoning for the area in which you are boating.

## Marine Animals and Habitat

### Anchoring

A piece of vandalism you may never realise you are committing is damage to the seabed when anchoring. Reefs and sea grass beds are very important to sea life, and you should avoid anchoring on them. You can almost always find a patch of sand among them that your anchor will not hurt. If you have no choice but to anchor on reef, use a specialised reef anchor.

Note: There may be anchoring prohibited rules in parts of marine parks.

### Disturbance of wildlife

You should not try to get close to sea lions, whales, dolphins and whale sharks – they can become distressed, especially if the mammals have babies with them.

### Noise, wake and wash

Another form of pollution is the nuisance you can cause simply by operating your vessel thoughtlessly. Wake and wash can cause damage to vessels on moorings and in pens, and injury to people on board them. Keep your speed low enough to cause negligible wash when passing near these areas – and also in the vicinity of wildlife.

Just like many near-shore residents, wildlife can also be upset by noise. For the sake of both people and wildlife limit the noise you have control over – music for instance – and ensure that your exhaust noise has not increased with the age of your motor.



*Wash from vessels can cause bank erosion.*

## Fremantle Bridges

Access to the ocean for many thousands of metropolitan boaters is through the Fremantle bridges, the narrowest part of the river and the point where the tidal streams flow most strongly.

Ferries, charter boats, yachts, power boats and dinghies merge and have to share the available water. Ferries, their steering less effective at low speed, need plenty of room. Most people realise this and stay well clear, but many do not realise the special problems of yachts.

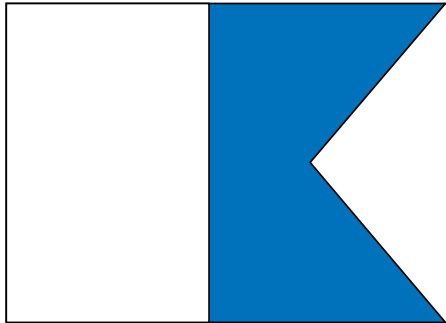
All but the smallest yachts have to lower their masts to pass under the two downstream bridges, and this makes them vulnerable in two ways. With the compensating weight of the mast now at deck level, the keel has a stronger effect and makes the boat's rolling motion more violent. The crew find it harder to keep their feet, but the lowered mast is almost unrestrained and strong rolling can damage it and anyone nearby.

If you can, avoid passing a yacht near the bridges, stay well clear and reduce your wake.



*Avoid passing a yacht near the bridges, stay well clear and reduce your wake.*

## Self Test Questions

- Q1. When operating a power-driven vessel near a person in the water you must:**
- A. Not exceed 4 knots within 100 metres.
  - B. Not exceed 6 knots within 100 metres
  - C. Not exceed 8 knots within 45 metres
  - D. Not exceed 10 knots within 50 metres.
- Q2. What is the maximum speed limit within 15 metres of a vessel underway?**
- A. 4 knots.
  - B. 7 knots.
  - C. 8 knots.
  - D. 10 knots.
- Q3. What is the maximum speed limit within a mooring area or boat haven?**
- A. 4 knots.
  - B. 7 knots.
  - C. 8 knots.
  - D. 10 knots.
- Q4. What types of boating accidents must be reported?**
- A. All accidents.
  - B. All accidents involving powered-vessels or water skiers.
  - C. Accidents resulting in serious injury or death, or if the vessel has been damaged enough to make it unseaworthy or unsafe.
  - D. Accidents involving loss of life, personal injury or property damage over \$1000.
- Q5. What vessels are required to be registered?**
- A. Vessels fitted with an engine of 5 horsepower or more.
  - B. Other than a tender, all recreational vessels fitted with, or can be fitted with an engine
  - C. All recreational vessels over 3.1 metres fitted with an engine.
  - D. None of the above.
- Q6. What does this flag (pictured) indicate?**
- 
- A. Dangerous cargo being carried on board a vessel – keep well away.
  - B. Diver below – keep 50 metres clear or travel at the slowest possible speed and keep a good lookout for people in the water.
  - C. Shallow water – proceed with caution in the vicinity.
  - D. Vessel aground keep clear.
- Q7. A Recreational Skipper's Ticket entitles you to drive:**
- A. Vessels under 8 metres in length only.
  - B. All recreational vessels.
  - C. All commercial vessels.
  - D. All recreational and commercial vessels.
- Q8. What is the maximum speed limit within 45 metres of a jetty, wharf or the shore?**
- A. 8 knots.
  - B. 6 knots.
  - C. 10 knots.
  - D. No speed limit applies.

Answers to the self test questions can be found on page 101.



## Collision Avoidance

### International regulations for preventing collisions at sea

At the end of this section, skippers should have a working knowledge of the International Prevention of Collision at Sea Regulations, a thorough knowledge of the International Association of Lighthouse Authorities (IALA) system of buoyage and a good understanding of navigation lights.

These are the traffic laws of the sea, and every ship or vessel afloat has to obey them.

All actions must be clear, made in good time, and be large enough so other skippers will understand your intentions. Generally alterations of course are more obvious than alterations of speed, but never hesitate to slow down to give yourself thinking time or more room.

There is a lot of detail in the collision rules, but this summary covers the main principles.

### Responsibility

Everyone has a responsibility to avoid collisions so, even if the rules require another vessel to keep out of your way, you must be ready to take action yourself.

### Lookout

Perhaps the most important rule of all. You must keep a good lookout with your eyes and all available means, at all times, especially in poor visibility and at night. At those times, if you have radar, sounder or plotter you should use it.



*Always keep a good lookout.*

### Safe speed

The lookout rule links with another that calls for you to travel at a speed that gives you time to manoeuvre to avoid collisions. Visibility, volume of traffic, background lighting and the water depth are some of the factors that might cause you to slow down.

### Assessing risk of collision

Constantly assess all the vessels in the vicinity to see if they are likely to come close. A useful technique is to see whether your line of sight (the bearing) to another vessel does not move ahead or drop back. If it is steady, you are on, or nearly on, a collision course.

Any action you now take under the rules must be obvious to the other vessel, and result in passing well clear.

### Restricted visibility

Fog is not common in WA, but it certainly occurs. A good lookout becomes even more vital, and you should make yourself more visible by turning on your navigation lights. Slow down and be ready to stop if you sight another vessel or hear a fog signal.

### Sound signals

Sound signals are sometimes used by ships and ferries to indicate an action they are about to take:

**One short blast:** I am altering course to starboard.



**Two short blasts:** I am altering course to port.



**Three short blasts:** My engines are going astern.



**Five short blasts:** (officially) I am unsure of your intentions; (practically) you are not following the rules – get out of the way.



## The rules of the road

The rules of the road, which apply on all waters in this state, also apply all over the world. You must keep a good lookout at all times and be ready to give way to other vessels.

If you must give way, do it in good time and make a move which will be obvious to the other vessels.

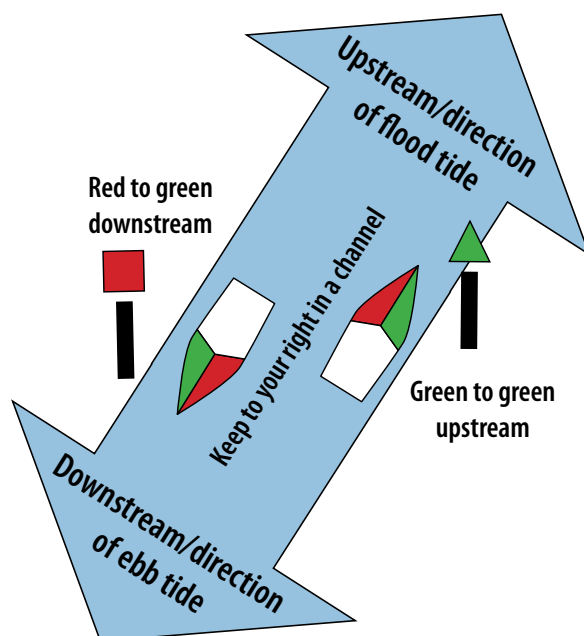
The golden rule is "look to the right, give way to the right, turn to the right and stay to the right".

## Channels

In narrow channels, all vessels should keep to their right hand side (starboard) of the channel.

**Travelling upstream:** When entering a harbour, proceeding upstream or in the direction of the flood tide starboard hand markers indicate the right hand side of a channel and port hand markers indicate the left hand side of a channel.

**Travelling downstream:** When leaving a harbour, proceeding downstream or in the direction of the ebb tide starboard hand markers indicate the left hand side of a channel and port hand markers indicate the right hand side of a channel.



## Operating rules

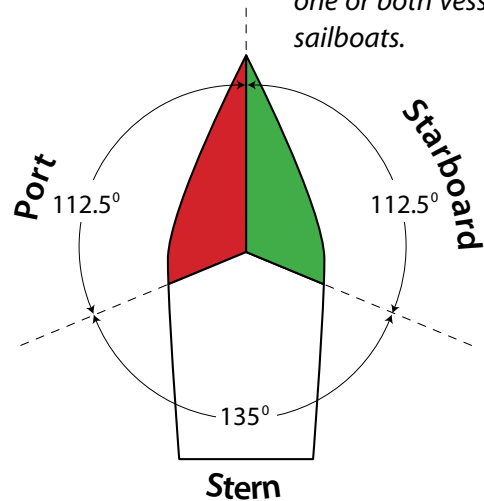
### Port

If a power-driven vessel approaches within this sector maintain your course and speed with caution.

### Starboard

If any vessel approaches within this sector, keep out of its way.

*Note: This rule may not always apply if one or both vessels are sailboats.*



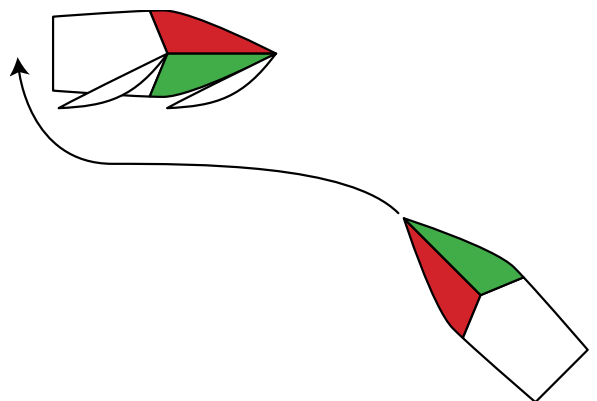
### Stern

If any vessel approaches this sector, maintain your course and speed with caution.

## General right of way

In general, power vessels have to keep out of the way of sailing and commercial fishing vessels, and vessels that are hampered by such tasks as dredging, cable laying and so on.

**Power gives way to sail.**



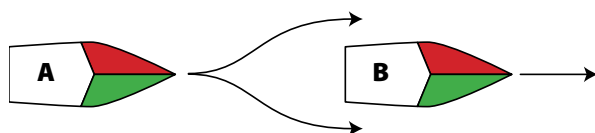
## Overtaking

This rule overrides all the other give-way rules. The overtaking vessel (including sailing vessels) must keep out of the way of the vessel being overtaken.

You can pass on either side of the vessel, but keep well clear – the other skipper may not have seen you.

If you are being overtaken, hold your course and speed until the other vessel is past and well clear.

*A keeps clear of B.*



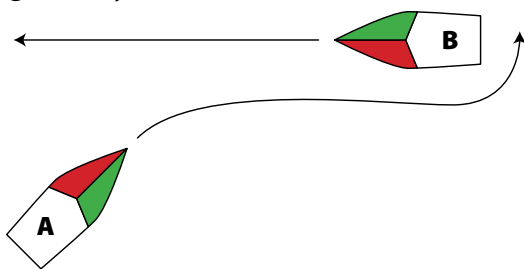
## Power to power

### Crossing

If the other vessel is on your **right** (starboard) side it has right of way and you must keep clear: you must either turn **right**, slow down to let the other vessel pass ahead of you – or do both.

If the other vessel is on your port side, you have right of way and should hold your course and speed. However, if you think the other vessel is leaving it too late, you have to take action yourself. The "right rule" still applies: if you alter course, alter to the **right** (starboard). Or you can slow down, or do both.

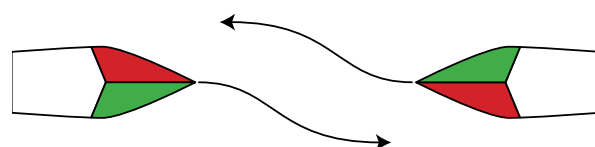
*A gives way to B.*



### Meeting head on

Both vessels must alter course to the **right** (starboard). If the other vessel turns the wrong way, you should turn even more **right**, slow down, or stop your vessel.

*Both vessels alter course to starboard.*

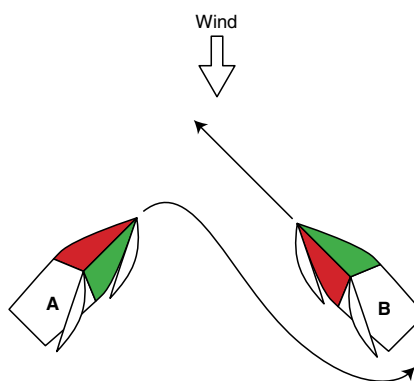


## Sailing vessels

### Wind on different sides

When sailing vessels have the wind on different sides, the vessel that has the wind on the port side shall keep out of the way of the other.

*A keeps clear of B.*

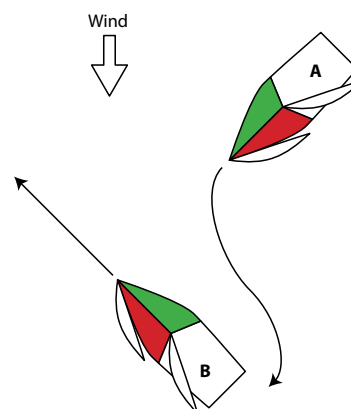


If a sailing vessel with the wind on the port side sees a sailing vessel to windward and cannot determine with certainty whether the other sailing vessel has the wind on the port or starboard side, it shall keep out of the way.

### Wind on the same side

When both sailing vessels have the wind on the same side, the vessel which is the closest to the wind (windward) shall keep out of the way of the vessel which is to leeward.

*A keeps clear of B.*



### Navigation lights

Navigating at night requires special care and attention. Vessels that operate from sunset to sunrise, whether at anchor or underway, must carry and exhibit the correct lights. A vessel is underway when not anchored, moored to the shore or aground.

Navigation lights must also be displayed during daylight hours in periods of restricted visibility. All vessels must comply with the regulations concerning lighting.

#### Extra care at night

Many navigation aids are unlit, and there are many other potential hazards, so keep your speed down. Some areas may have special speed limits after dark; for example, the open speed limit areas of the Swan and Canning rivers are reduced to 10 knots between sunset and sunrise.

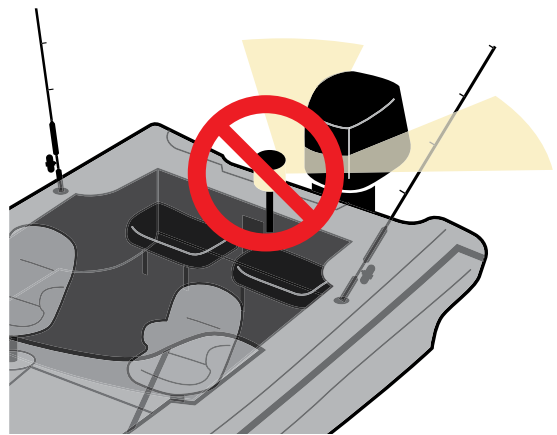
#### Night vision

Rhodopsin (the molecule found in the rods in our eyes that allows for night vision) is extremely sensitive to light. Rhodopsin will immediately bleach when exposed to a bright white light and night vision will be lost. It takes time for night vision to recover, about 10 minutes for 10 per cent, 30-45 minutes for 80 per cent - the rest may take hours.

Many people use red light to help preserve night vision. Placing red filters over cabin lights will allow you to operate at greater light intensity level than under a dimmed white light without disrupting your night vision.

#### Lights must not be obscured

Check that your vessel's structure does not obscure the navigation lights. The masthead light on many trailer boats is on an extending pole at the stern, and it does not lift high enough to be visible over the cabin top or windscreen. This is dangerous and unacceptable.



*Navigation lights must be displayed from sunset to sunrise or in poor visibility.*

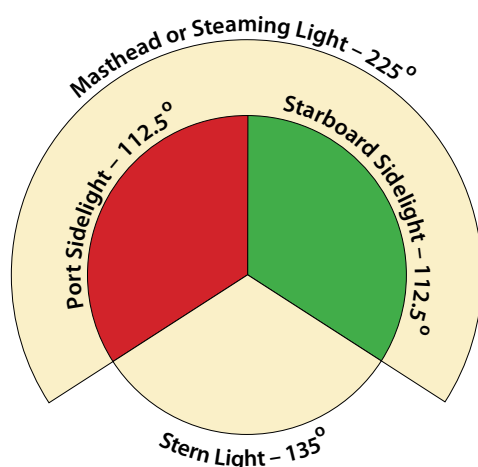
## Types of lights

It is crucial the lights on your vessel be placed and displayed appropriate to the size and class of your vessel. These lights tell other vessel operators what your boat is doing – whether it is at anchor, under sail or motoring. This guide will assist you in understanding the correct use of navigation lights on your vessel.

## Placement of lights

### Side lights

The port (red) and starboard (green) lights shine for  $112.5^\circ$  either side of the centre line (bow to stern) of the vessel.



### Masthead and stern lights

The white masthead light shines forward in an arc of  $225^\circ$ . The white stern light shines aft and covers an arc of  $135^\circ$ . The combination of these lights creates a  $360^\circ$  arc of white light. In a vessel of less than 12 metres these two separate lights can be combined into a single all round white light.

The masthead, stern and/or all round white light must be fitted (if practical) on the centre line of the vessel.

## Range of visibility of lights

### Vessels under 12 metres

- Masthead light – 2 nautical miles.
- Sidelight – 1 nautical miles.
- Stern light – 2 nautical miles.
- All round lights – 2 nautical miles.

### Vessels 12 metres to 20 metres

- Masthead light – 3 nautical miles.
- Sidelight and stern light – 2 nautical miles.
- All round lights – 2 nautical miles.

## Lights required for power vessels underway

### Vessels under 7 metres and less than 7 knots

Power vessels of less than 7 metres in length, with a maximum speed of 7 knots or less shall exhibit a visible all round white light and, if possible, separate or combined sidelights.

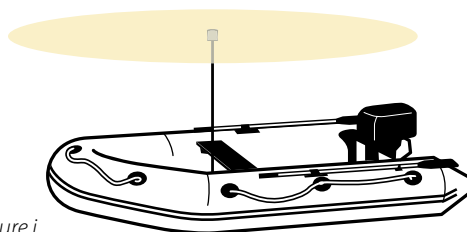
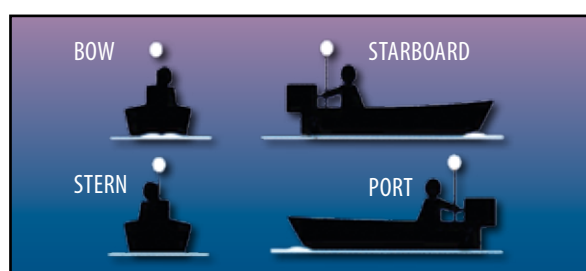


Figure i



### Vessels under 12 metres

Power vessels of less than 12 metres in length shall exhibit:

- separate or combined sidelights and an all round white light; or

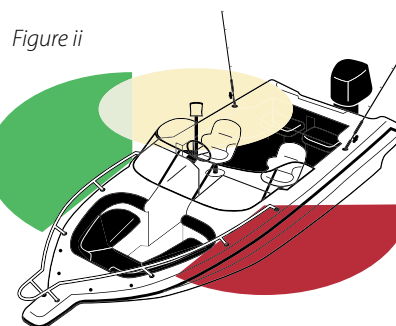
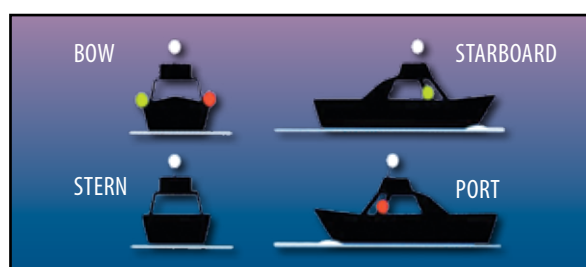


Figure ii



- separate or combined sidelights, a masthead light and a stern light (see figure iii, page 26).

Masthead or white all round light shall be carried at least one metre above the sidelights.

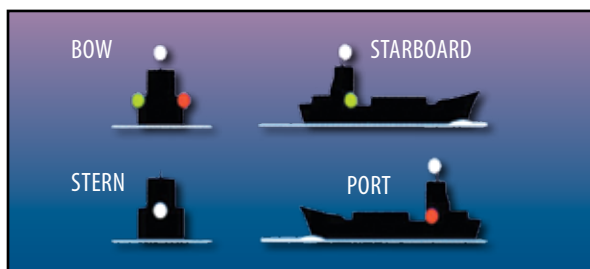
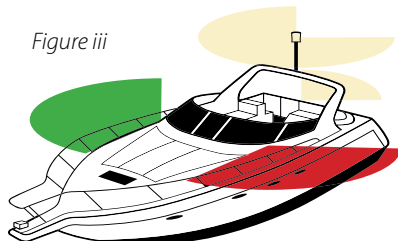


**Vessels 12 metres to 20 metres**

Power vessels of more than 12 metres in length but less than 20 metres in length shall exhibit:

- i) a masthead light, separate sidelights and stern light; or

Figure iii



- ii) a masthead light, combined sidelights and stern light.

The masthead light shall be carried at least 2.5 metres above the gunwale. Combined sidelights shall be carried at least one metre below the masthead light.

**Lights required for sailing vessels underway**

Sailing vessels while underway (being motor driven) shall exhibit navigation lights applicable to power driven vessels.

**Sailing vessels under 7 metres**

Sailing vessels of less than 7 metres in length, or vessels being rowed shall exhibit the lights required for sailing vessels over 7 metres in length (see figure v, vi on page 27). If not, they shall have ready for use an electric torch or lighted lantern showing a white light which shall be exhibited in sufficient time to prevent a collision.

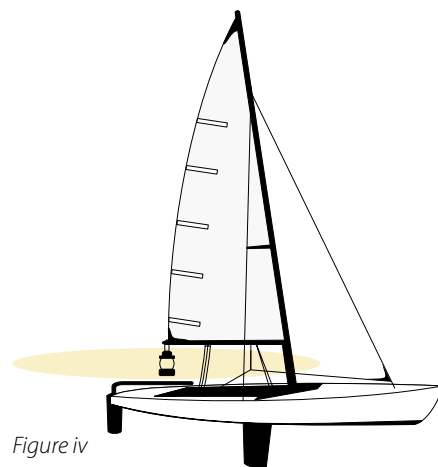
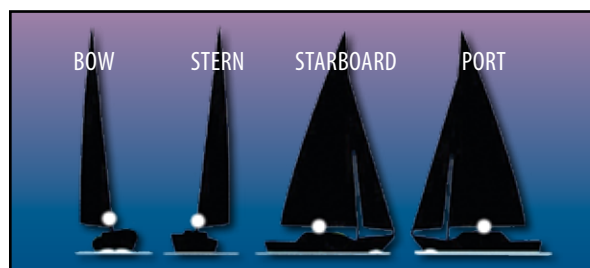


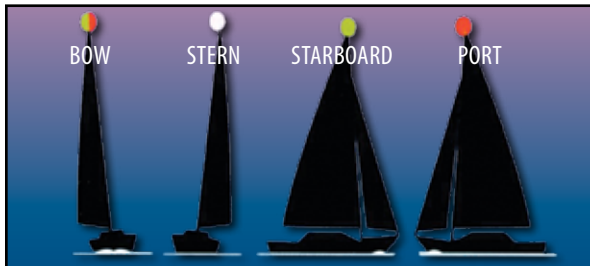
Figure iv



### Sailing vessels 7 metres to 20 metres

Sailing vessels of more than seven metres in length and less than 20 metres in length shall exhibit:

- i) Combined lantern, that is at or near the top of the mast and incorporates sidelights and stern light; or

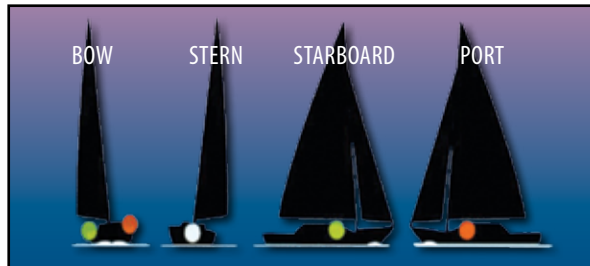
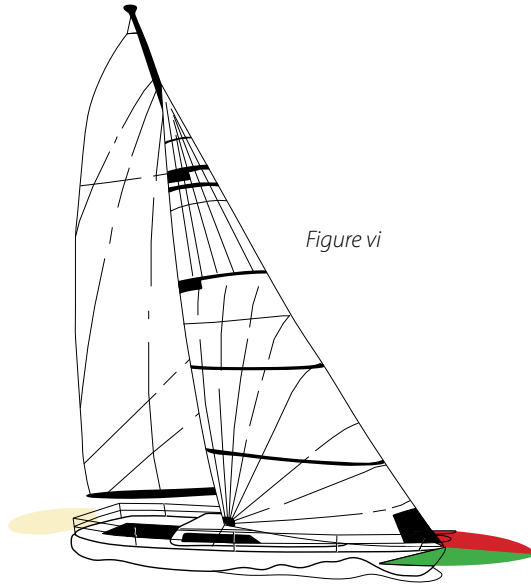


- ii) Separate sidelights and stern light (see figure vi).

### Sailing vessels over 20 metres

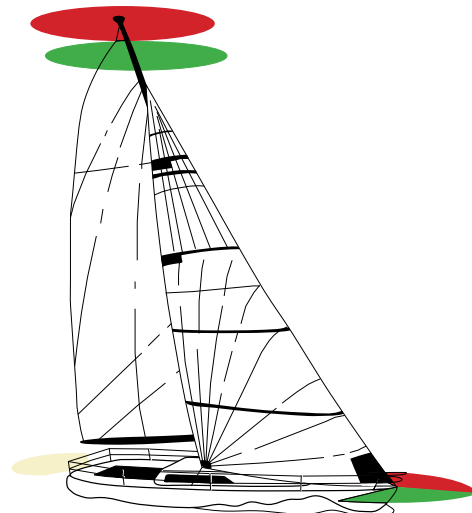
Sailing vessels more than 20 metres in length shall exhibit sidelights and stern light and may carry the optional red and green all round lights.

However, these vessels may not carry a combined lantern.



#### Optional lights

A sailing vessel of any length, which is fitted with sidelights and a stern light (but not a combined lantern) may, in addition, carry two all round lights in a vertical line at or near the top of the mast. The upper light shall be red and the lower green.





### Power/sailing vessels at anchor

#### Vessels under 50 metres

Vessels less than 50 metres in length at anchor, shall exhibit an all round white light placed where it may best be seen. Anchor lights must always be shown from sunset to sunrise. If you are at anchor or in a busy area, then show additional lights to ensure you are seen and keep a good watch.

There are many other combinations of lights used on vessels. The lights shown relate to the activity the vessel is engaged in – activities such as fishing, dredging, not under command.

A simple rule of thumb for a small power boat is to stay clear of any vessels exhibiting additional lights. For further information contact DoT on 1300 863 308.

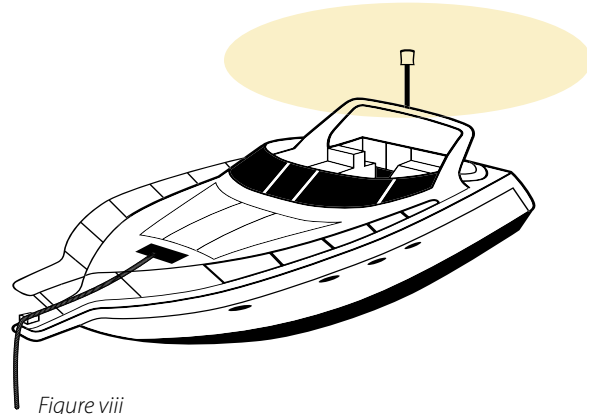


Figure viii



*An anchor light is required, when at anchor, between the hours of sunset and sunrise.*

## IALA Buoyage

### Navigation aids

An international system of buoys, beacons and lights helps guide vessels clear of dangers and indicates safe water. Navigation marks are recognised by distinctive shapes and colours, and their lights by distinctive colours and rhythms.

All these marks are on the chart – when you have any doubts what you are looking at always refer to the chart.

### Lateral Marks

The marks indicating the port and starboard hand sides of channels are called Lateral Marks. Those topped by a red can shape are called Port Hand Marks, and those topped by a green triangle shape are called Starboard Hand Marks.

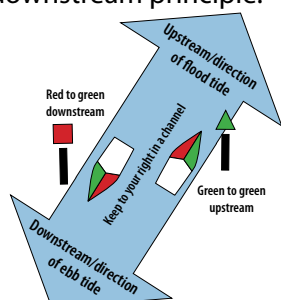


When entering harbours or travelling upstream in a river, leave port hand marks on your port side and starboard hand marks on your starboard side.

When leaving harbours or travelling downstream, leave port hand marks on your starboard side and starboard hand marks on your port side.

One way to remember this is the saying, “there’s some **red, port, left** in the bottle” when travelling upstream.

Lateral Marks are not always placed in pairs where you simply have to pass between them. When you see just one, you will need to bear in mind the upstream-downstream principle.



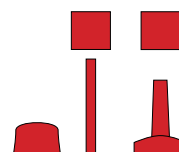
### Lights

When lit, Port Hand Marks have red lights, Starboard Hand Marks have green lights. These are the only marks to use these colours; the lights can use any rhythm.

### Port Hand Marks



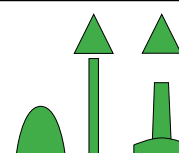
	Quick Flashing
	Flashing
	Long Flashing
	Group Flashing



### Starboard Hand Marks

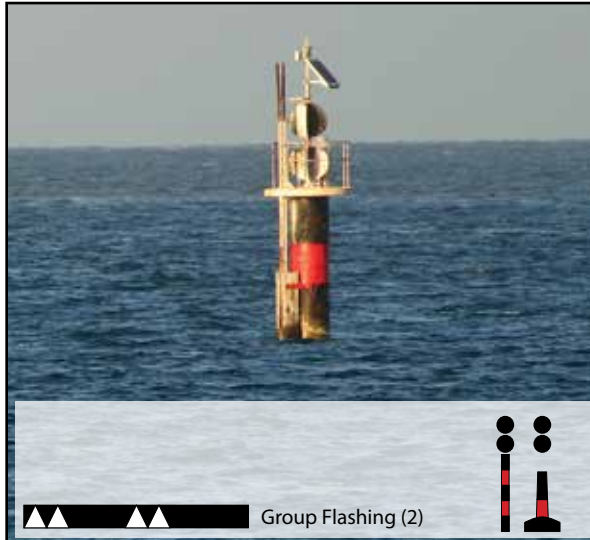


	Quick Flashing
	Flashing
	Long Flashing
	Group Flashing



### Isolated Danger Marks

As the name suggests, it marks danger with navigable water all around, too small to need marking with a series of marks. In general, pass as well clear of it as you can.

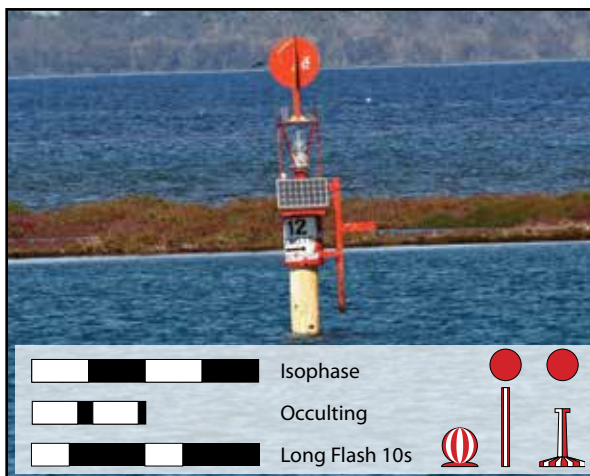


#### Light

If lit, it will have a white light, flashing in groups of two. The memory jog is two flashes to match the two-sphere topmark.

### Safe Water Marks

There is safe water all around this mark. Most commonly, it is used to mark the seaward end of channels into ports. They are sometimes used to mark the centre of a channel; occasionally they are used in a series down the middle of a channel instead of Lateral Marks on the edges of the channel.



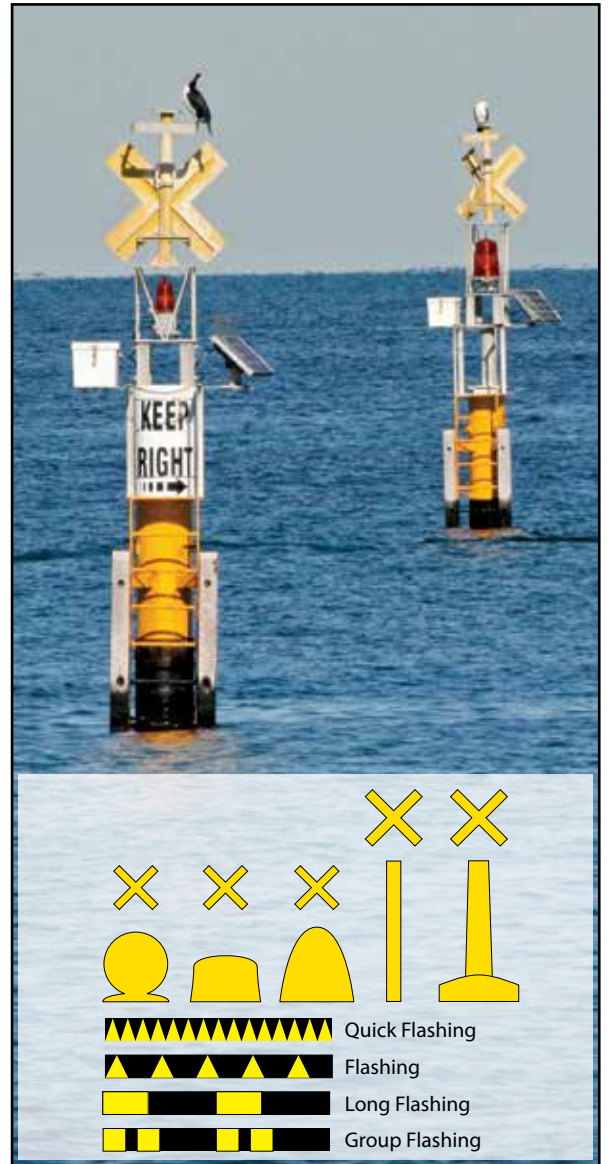
#### Light

If lit, it will have a white light, whose rhythm always has a long period of light in the sequence.

### Special Marks

This is used for such things as traffic separation schemes, for example at the entrance to Fremantle Fishing Boat Harbour, spoil ground, aquaculture areas, cables and pipelines, or to temporarily replace a missing mark.

Special Marks can have a can, cone or sphere as the body if they are being used in the same sense as Lateral or Safe Water Marks.



#### Light

If lit, a Special Mark will have a yellow light using any pattern that will not confuse them with other navigation marks.



## Cardinal Marks

These are used where Lateral Marks would be inappropriate or confusing. They indicate the compass direction of the safest water, so having a compass on board is very useful.

You should pass to the east of an East Cardinal Mark, to the south of a South Cardinal, to the west of a West Cardinal and to the north of a North Cardinal.

The lights, topmarks and colour schemes have a logic to help you memorise them:

The cones on top point in the direction of the black segment of the pillar:

- North – both cones top point up, black at the top of the pillar.
- East – the cones point up and down, black at top and bottom.
- South – both cones point down, black at the bottom.
- West – the cones point inwards, black in the middle.

## Lights (white)

The lights patterns almost follow the clock face:

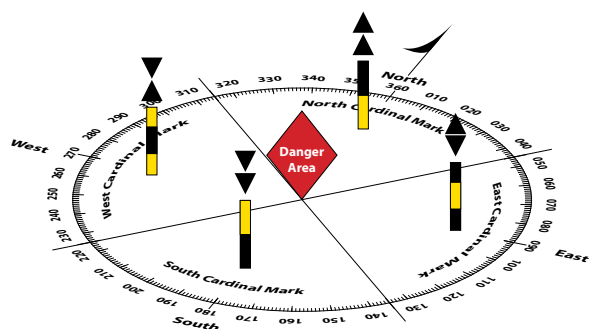
3 o'clock = East Cardinal = 3 flashes

6 o'clock = South Cardinal = 6 flashes + 1 long

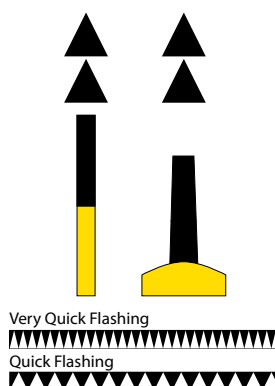
9 o'clock = West Cardinal = 9 flashes

12 o'clock = North Cardinal = continuous flashing.

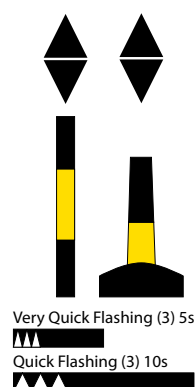
The long extra flash for south, and the continuous flash for north are to avoid confusion if you lose track with your counting.



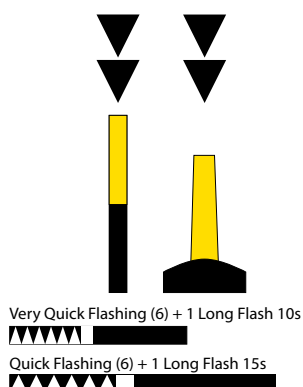
## North Cardinal



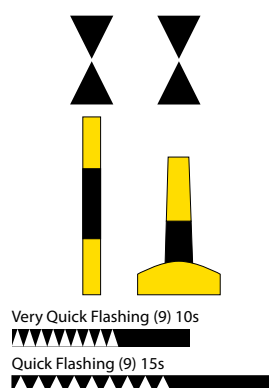
## East Cardinal



## South Cardinal



## West Cardinal



## Leads

Leads are a pair of marks that when aligned form a transit. They are often used for the approaches to anchorages (there are many at Rottnest) instead of Lateral Marks. You steer to keep the rear lead directly above the front lead.

## Lights

If lit, they may use any colour. The chart will have the details.



The below leads as represented on a chart.



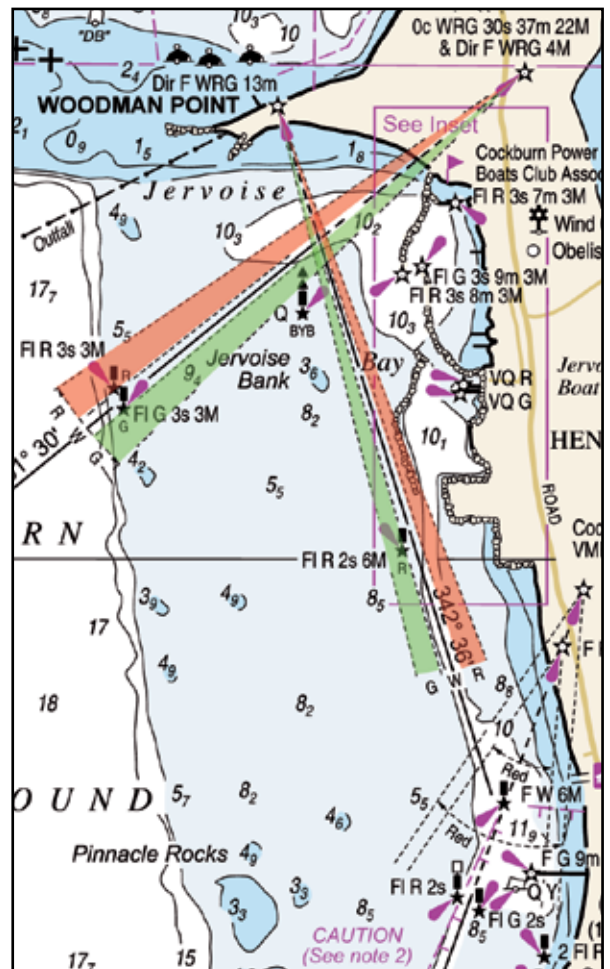
Leads indicate the safe course to steer.

## Sectored lights

Sectored lights (eg Woodman Point) are navigation aids that indicate a safe channel through shallow or dangerous waters.

Generally there are three lights of different colours each identifying a sector of an arc. The white sector will generally be the safe water and the red or green sectors areas to avoid. It is particularly important to check the chart for the light's meaning, purpose and to determine the extent of the safe passage.

To use the lights in the example below the vessel is on the recommended course as long as it keeps within the white sector of the light. If the light colour shifts to red or green an adjustment of course is required to bring it back into the white and back on track.



Cockburn Sound has many sector lights to assist ships entering the port.

## Self Test Questions

**Q1.** You're in charge of a motor boat with right of way and an approaching motor boat did not seem to be taking action to prevent a collision, what would you do?

- A. Speed up because you have a bigger engine and you can get past in time to prevent a collision.
- B. Exercise caution and take any necessary avoiding action.
- C. Maintain your same course and speed because he is on your starboard side and he should give way to you.
- D. Let off an internationally recognised distress signal.

**Q2.** What is implied by "maintaining a good lookout"?

- A. Looking ahead.
- B. Looking forward and to each side.
- C. Looking behind.
- D. By sight, hearing and all available means.

**Q3.** You are overtaking another vessel. What action do you take?

- A. Overtake on the starboard (right) side.
- B. Overtake on the port (left) side.
- C. Keep out of the way of the vessel you are overtaking.
- D. No special action to be taken.

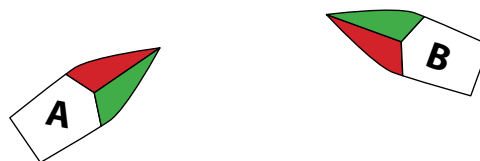
**Q4.** When travelling upstream in a narrow channel or river, where should you operate your vessel?

- A. On the port (left hand) side.
- B. On the starboard (right hand) side.
- C. In the middle of the channel.
- D. On either side when safe to do so.

**Q5.** What is the sound signal for "I am operating astern propulsion"?

- A. Three short blasts.
- B. Two short blasts.
- C. One short blast.
- D. One prolonged blast.

**Q6.** Which vessel must give way in the situation pictured?



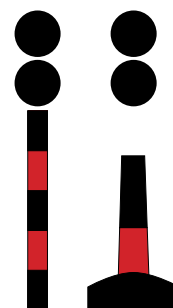
- A. Vessel A gives way to vessel B.
- B. Vessel B gives way to vessel A.
- C. Neither – they should continue their course until one gives way.

**Q7.** What lights are required on a power-driven vessel, less than 12 metres in length, when underway at night or in reduced visibility?

- A. Sidelights and green masthead light.
- B. Two all round white lights.
- C. Red and green sidelights only.
- D. Red and green sidelights and either an all round white light or a masthead light and stern light.

**Q8.** What kind of navigation mark is this?

- A. Port Lateral Mark.
- B. Starboard Lateral Mark.
- C. Safe Water Mark.
- D. Isolated Danger Mark.



**Q9.** A top has fallen off a cardinal mark the colours on the pole from the top down ... Black – Yellow – Black. What type of navigation mark is it?

- A. It is a West Cardinal.
- B. It is an East Cardinal.
- C. It is a North Cardinal.
- D. It is a South Cardinal.

Answers to the self test questions can be found on page 101.



## Maintenance

### Stability

If the owner of a commercial vessel wants to make structural changes to the vessel they have to get DoT's permission, and permission is dependent on what a naval architect has to say about it. One of the biggest reasons for needing permission is the effect on the vessel's stability the changes might have.

You do not need permission to make changes to a recreational vessel, but you and your passengers' safety requires you to think them through carefully. Adding a flybridge (and the weight of people on it) or a hardtop will raise the centre of gravity and reduce stability. Fitting a bigger motor will change the trim. Adding fittings might pierce a buoyancy chamber.



*Overloading can seriously affect a vessel's stability.*

### Vessel maintenance

A well-maintained vessel is basic to safety at sea. Poor motor maintenance alone is responsible for thousands of calls for assistance each year.

This section covers maintenance techniques and schedules that skippers should be aware of to keep their vessels in a reliable and seaworthy condition.

### Engine service

Manufacturers usually recommend a service by a specialised workshop at least once a year, even if you use the motor very little. This ensures that vital internal parts, like the water pump, get looked at. If you work your motor hard, then you should have the gearbox oil changed every three months.

### Electrical system

Electrical systems on boats commonly fail through corrosion.

- Keep all electrical systems clean and corrosion free by frequent inspections.
- Spray terminals, electrical connectors, etc. with a corrosion-retarding agent. Keep all electrical fittings dry.
- Check the lights are working even if you expect to be out only during daylight hours.

### Batteries

One of the most common reasons for calling on sea rescue is a flat battery. Batteries deserve a lot of attention at regular intervals.

- Use a genuine marine battery – your motor's handbook will tell you what capacity. Check it and charge it regularly. If the battery does not hold its charge, it should be tested or replaced.
- Batteries should always be secured with brackets within a ventilated container.
- If it is in an enclosed space, ensure it is properly ventilated.
- Terminals and cables must be kept clean, and terminals greased.
- Terminals and connections must be tight and secure.
- Top up battery cells with distilled water and check each cell with a hydrometer.
- Turn off the power to the charger before disconnecting the charging pads. This may prevent an explosion.



*Check battery terminals for dirt and corrosion.*



## Spark plugs

With modern engines, spark plugs generally last longer. If they fail, then cleaning them is not very likely to bring them back to life. Carry a spare set of new plugs and a plug spanner.



*Carry a spare set of new plugs and a plug spanner.*

## Water pump

Outboard water pump impellers are normally changed at the annual service. If you have been operating in the shallows and stirring sand, consider changing more often.

Make sure water is being discharged from the exhaust system or telltale when started.

Regularly check for water leaks.



*Check the telltale to be sure it is working.*

## Gearbox oil

Bleed a little oil from the drain screw in the gear case – if water appears, or if the oil looks milky, take the motor to a service centre.

## Fuel

Fuel is a key element in successful boating. Running out of it, disabling the engine because of dirt or excess moisture in it, or exposing it to fire risks are all possibilities against which you should take precautions.

### Fire/explosion risks

Fuel, for engines or for stoves, is the most common component of boat fires or explosions. Leaks in systems and ventilation shortcomings are the usual problems. Regularly inspect fuel and gas tanks, valves, pumps and lines for visual condition – especially corrosion – and leaks. Get problems fixed by an expert; temporary repairs can be dangerous.

Do the sniff test each time you board your vessel. If you smell fuel – find the problem.

### Fuel system

Check and change filters frequently to be assured of clean fuel entering your engine. Carry spare filters.

Keep tanks topped-up and close them up when not in use. This reduces the chance of condensation occurring and putting water in your fuel.



*Check filters frequently and carry spares.*

### Use clean, fresh fuel

Clean out portable fuel tanks at least yearly and replace old fuel after a long period of inactivity; water is likely to have built up in it.

If your motor uses pre-mix lubrication you should not use petrol-oil mix older than three months. The oil will lose lubrication properties and produce sludge. For direct oil injection motors, ensure the oil reservoirs are kept full.

## Propellers

The rubber bushing of an outboard or sterndrive's propeller can fail, especially if it has hit sand or rocks. Some older models use a shear pin instead to protect the shaft.

Carry a spare shear pin, if appropriate, and a spare propeller – perhaps a second-hand one.

Keep shafts and props clean and in good working order. This includes removing the propeller, hammering out any bends, and filing any jagged bits smooth.

Snagged fishing line wrapping around the outboard leg propeller shaft can destroy the gearbox seals and allow water in. Water in the gearbox will eventually cause it to fail. Remove the propeller regularly to check for fishing line – or any time you think you might have hit a line.



*Check the propeller regularly for dents and damage and the shaft for snagged fishing line.*

## Routine maintenance

### Before each trip

- Test navigation lights.
- Check the bilges are clean and dry, investigate the sources of leaks.
- Check that the bilge pump works.
- Check that the bungs are not worn and that the washer is in good condition.
- Test steering gear for stiffness.

### After each trip

- As you winch the boat onto the trailer inspect the wire, webbing or rope for wear.
- Flush the engine with fresh water and wash down its exterior.

## Monthly

- Oil steering gear cable with the correct lubricant, check hydraulic fluid levels.
- Check freeing ports (deck drain flaps) for positive opening and closing action.
- Check condition of all safety equipment (the detail of this is included in the safety equipment section, page 38) before securely storing it.
- Inspect the boat for rubbish – it is especially important to remove stray metal items from an aluminium boat.
- Check berthing lines and anchor rope for wear.
- Check that all auxiliary systems (anchor winch, windscreen wipers, etc.) are functioning.

## Yearly

- Inspect through-hull fittings for corrosion and water tightness; ensure sea cocks are working and check the condition of hoses and clamps attached to them.
- Check that important fittings (eg cleats, engines bolts, guard and grab rails) are still securely attached.
- Have the LP gas system serviced.
- Have any 240 volt system checked.
- Check aluminium hulls for corrosion and fatigue cracks, check fibreglass for blistering and impact cracks.
- Check anodes for erosion, replace when about 40 per cent eroded.



*Check anodes for erosion.*

## Self Test Questions

- Q1. How often should you have the motor on your vessel serviced?**
- A. Before each time you use the vessel.
  - B. Every four months.
  - C. At least once a year.
  - D. Once every two years.
- Q2. Before you go on a boating trip you should?**
- A Test navigation lights.
  - B Check bilges are clean and dry.
  - C Check steering.
  - D All of the above.
- Q3. You should replace old fuel after a long period of inactivity because?**
- A. Your vessel won't reach top speed.
  - B. The oil will settle on the bottom of the tank.
  - C. The octane level will reduce with time.
  - D. Water is likely to have built up in it.
- Q4. Batteries in a vessel should be located?**
- A. In a ventilated container.
  - B. In a sealed container.
  - C. As low as possible in the bilge.
  - D. On deck, exposed to the elements.
- Q5. If your vessel is fitted with a LP gas system, how often should you have it serviced?**
- A. Before each trip.
  - B. After each trip.
  - C. Monthly.
  - D. Yearly.
- Q6. Putting people up high on a flybridge will change the stability of a vessel by?**
- A. Lowering the centre of gravity and increasing stability.
  - B. Raising the centre of gravity and lowering stability.
  - C. Making the vessel ride the waves better in a following sea.
  - D. Making the vessel easier to turn.

Answers to the self test questions can be found on page 101



Flush the motor and wash it down with fresh water after each trip.



## Safety Equipment

Wherever you operate your boat you will be required to carry certain items of safety equipment. The quantity and type of equipment varies depending on how far offshore you travel, and it is important to understand that these are minimum requirements.

### Keep it maintained

All safety equipment must be maintained in very good condition and be accessible at all times. To maximise your chances of survival on the water, you and your passengers need to know:

- where it is stowed;
- how to use it; and
- when to use it.

### Know where it is stowed

As skipper, you must brief everyone on the boat about where the equipment is kept. It should be stowed where it is easily reached and preferably visible.

Keep the following points in mind every time you load and stow your equipment aboard:

- life jackets need to be accessible and ready for use, not locked away in a cupboard or under bunks;
- your flares should be kept dry and accessible (use a waterproof container that will float); and
- an EPIRB should be positioned in the cockpit or near the helm where it can be reached quickly in an emergency.










### Know how to use it

Make sure everyone on board knows how to use the safety equipment. Have everybody practise putting on life jackets in good conditions so they are familiar with how they feel and how they do up.

Make sure you are familiar with the instructions for use of EPIRBs, flares and the fire fighting equipment. You may not have time for a crash course in an emergency.

### Know when to use it

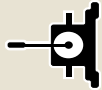

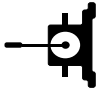
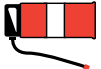

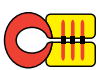
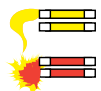
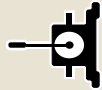





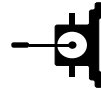
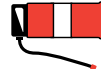
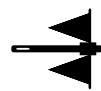
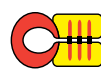


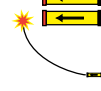

'In good time' sums it up. Life jackets take time to put on, so do not hesitate to wear them in deteriorating weather. Your radio lets you pass on varying degrees of urgency to a sea rescue group, so do not wait for full-blooded distress before calling for help.

 Department of Transport		Protected Waters lakes, rivers, inlets and estuaries except Lake Argyle	0-2 Nautical Miles from the mainland shore	2-5 Nautical Miles from the mainland shore	Over 5 Nautical Miles from the mainland shore
Required Safety Equipment					
	<b>Recreational Skipper's Ticket</b> The skipper of a recreational vessel, powered by a motor greater than 4.5kw (6 hp) must hold an RST.	✓	✓	✓	✓
	<b>Bilge Pump/Bailer</b> All vessels must carry a bilge pump. Vessels under 7 metres may carry a bailer in lieu of a bilge pump.	✓	✓	✓	✓
	<b>Fire Extinguisher</b> Vessels with an inboard engine or carrying hydrocarbon heating or cooling appliances must carry an approved fire extinguisher.	✓	✓	✓	✓
	<b>Anchor and line</b> An efficient anchor and line must be carried.	—	✓	✓	✓
	<b>Lifejacket</b> A lifejacket bearing the label PFD Type 1 or the Australian standard AS 1512 or AS 4758 - Level 100 (or higher) must be carried for every person onboard.	—	✓	✓	✓
	<b>Red and Orange Flares</b> At least two hand held red flares and two hand held orange flares must be carried. Two parachute flares may be carried in lieu of the two hand held red flares and a smoke canister may be carried in lieu of the smoke flares.	—	✓	✓	✓
	<b>EPIRB</b> A 406 MHz EPIRB registered with AMSA bearing the standard AS/NZS 4280.1 must be carried if proceeding more than 2 miles from the mainland shore or more than 400 metres from an island located more than 2 miles from the mainland shore.	—	—	✓	✓
	<b>Parachute Flares</b> A minimum of two parachute flares must be carried if operating more than 5 miles from the mainland shore or more than 1 mile from an island located more than 5 miles from the mainland shore.	—	—	—	✓
	<b>Marine Radio</b> A marine radio must be carried if operating more than 5 miles from the mainland shore or more than 1 mile from an island located more than 5 miles from the mainland shore. The radio can be 27 MHz, VHF or HF.	—	—	—	✓

RSE-1012



## The required safety equipment for area of operation

The MINIMUM quantity of safety equipment that you are required to carry varies with the distance that you operate from the shore.	Bilge Pump	Fire Extinguisher	Anchor	Life jacket	Flares	EPIRB	Parachute Flares	Marine Radio
<b>Protected waters</b> lake, river or estuary, but does not include the waters of Cambridge Gulf or Lake Argyle			×	×	×	×	×	×
<b>0-2 nautical miles</b> from the mainland shore.						×	×	×
<b>2-5 nautical miles</b> from the mainland shore.							×	×
<b>Over 5 nautical miles</b> from the mainland shore.								

\* Required if operating more than two nautical miles from the mainland shore or more than 400 metres from an island located more than two nautical miles from the mainland shore.

\*\* Required if operating more than five nautical miles from the mainland shore or more than one nautical mile from an island located more than five nautical miles from the mainland shore.

\*\*\* If you are operating beyond five nautical miles from the mainland shore or more than one nautical mile from an island located more than five nautical miles from the mainland shore you only need to carry the offshore set of flares ie two parachute flares and two hand held orange smoke flares.

## Safety Equipment

## **Bailer / Bilge pump**

### **Who must carry bilge pumps or bailing equipment?**

All vessels must carry some form of bilge pump or bailing equipment.

### **Bailers**

Vessels under seven metres may have a bailer instead of a pump.

Depending on the size of the vessel, a strong bucket with two metres of rope attached makes an excellent addition to your gear list. As a safety item, it is useful both for bailing water out and fighting fires.

### **Bilge pumps**

Bilge pumps are required for boats seven metres and over, may be manual or power operation, and must be capable of pumping four kilolitres per hour. If you fit an electric bilge pump with an automatic switch it must have an indicator to show when the pump is working. Check its operation regularly, and keep it well maintained.

The bilge pump should be protected by a strainer to prevent choking of the pump suction. Clean bilges reduce the possibility of blocked pumps.



*A bailer or bilge pump is required on all vessels except personal water craft.*

## Fire extinguishers

### Who must carry a fire extinguisher?

If your vessel is fitted with an inboard engine (personal water craft are exempt) or with cooking, heating or cooling systems that use flames, you must carry an approved fire extinguisher.

You make your own choice of extinguisher (provided it is made to Australian Standards) from foam, dry chemical (powder), carbon dioxide or vaporising liquid.

Most trailer boats carry a dry chemical (powder) extinguisher, which is a good 'all-rounder' and also the most popular with larger vessels. Some boats with enclosed engine rooms also have a built-in smothering gas or water mist system.

Although a water extinguisher is not acceptable as your sole extinguisher, your bailer will do a fine job in its stead for extinguishing burning solids.



Fire extinguishers should be mounted securely and in an accessible location.

### Inspections

Fire extinguishers should be inspected at least every six months. All extinguishers other than carbon dioxide have a pressure gauge indicating their state of charge, and a security seal on the trigger. They should be recharged if the seal is broken or the gauge is not in the green sector of the scale. Tap the gauge lightly to make sure that the needle is not stuck.

Mud wasps and other creatures have often been known to clog up the nozzle of fire extinguishers. Check and clean out if necessary.

The dry chemical (powder) extinguisher should be taken off its bracket and shaken. This is to prevent the powder inside from compacting. A carbon dioxide extinguisher needs to be checked by weight. If the loss is more than 10 per cent of the net weight of the contents, it needs to be recharged.

### Serviceable condition

Fire extinguishers must be maintained in a serviceable condition, check that the marker in the gauge is in the green position. If the marker is in the red it is not in a good operational condition.



Check the gauge on extinguishers regularly to ensure it's serviceable.

# Fire Extinguishers

## Anchors

### Anchors – who must carry one?

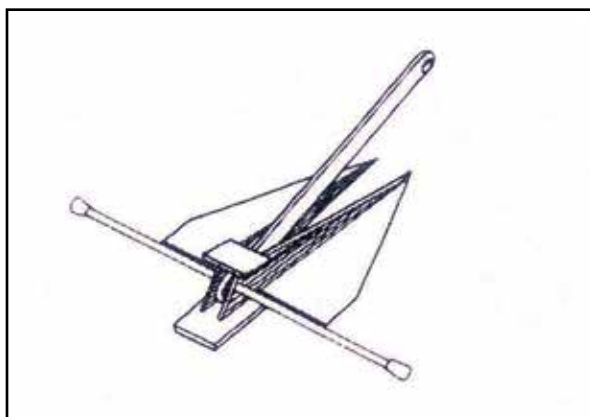
If you are operating in unprotected waters (outside the waters contained by any breakwater or in any lake, river or estuary other than the waters of Cambridge Gulf or Lake Argyle) you must carry an efficient anchor and line. The anchor must be of a type that will hold in all seabeds and with enough line to suit the depths in which you usually operate.

### Choosing an anchor

Provided it is a type that will hold in all seabeds, the choice of anchor is up to you. Most people choose one of the following high holding power designs:

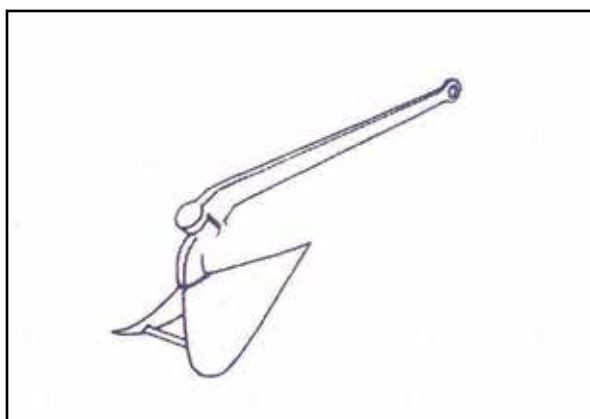
#### Danforth

This is the most common type for trailer boats that do not stow the anchor below a bowsprit. It has excellent holding power in most bottoms, especially sand and is modest in price.



#### Plough or CQR

This is more expensive than the Danforth because of its more complex construction. Its holding power is similar, but it has a better reputation for holding in mud. Also, it is better suited for self-stowing under a bowsprit.



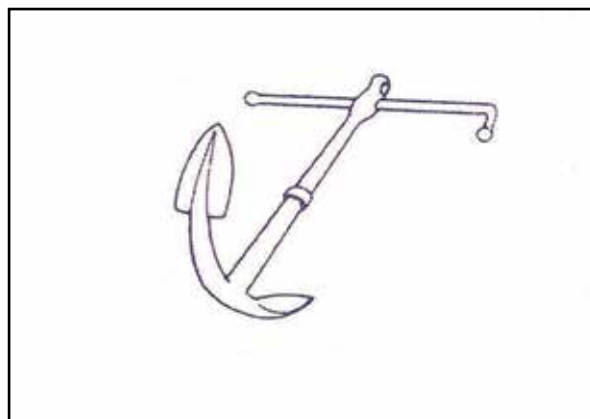
#### Bruce or spade

This is the best of all for bowsprit stowage and is gaining in popularity. However for small boats, where the anchor is stowed within the vessel, it is very cumbersome.



#### Standard stockless – Admiralty pattern

The sailors' cap badge anchor looks old fashioned, but it is the best at piercing weed beds and it's also works well in mud. Weight for weight it is one of the best all round anchors, but it can be inconvenient to stow.



#### Reef or grapnel

Effectively a bundle of mild steel rods bent to make a grapnel, the reef anchor is too specialised to be acceptable as a boat's sole anchor. For anchoring on a rocky bottom, though, it is a useful extra. Unlike a normal anchor, which can be near impossible to retrieve from rock, this will straighten out under a heavy load and withdraw.



Anchor cables

An anchor cable may be all chain, or rope with a piece of chain joining it to the anchor. The chain is necessary for its weight, it allows a more horizontal pull on the anchor and acts as a shock absorber. It also reduces chafe of the rope.

The best anchor rope is nylon because it has a lot of stretch and great strength; next best is polyethylene silver line. If the rope is nylon, you will need at least two metres of chain; other rope will need at least three metres.

Your anchor and cable should always be ready to run freely at a moment's notice.

Weather

Check both the existing and forecast weather before anchoring. This could influence whether you will use more cable, or even decide to move elsewhere. Strengthening winds blowing on shore (technically giving you a lee shore) should especially influence your decisions.

Selecting a site

- If you have a choice of bottom in which to anchor (in other words it is not an emergency), sand is ideal, firm mud next best. It is better not to anchor on a weed bed both for environmental reasons, and because most anchors find it difficult to grip.
- Check that when have let your cable out you will have enough room to swing to wind or tide without hitting the bottom or other vessels.
- If you are in a tidal area, ensure that you will have enough depth at low water.

Preparing to anchor

Having picked the spot to anchor and determined that you have enough cable, at low speed turn your boat to face the wind (on a low wind day face the current, if any). Put the motor in neutral, then in reverse for long enough to get the boat moving astern.

Lowering

Lower the anchor (do not throw it) to the bottom, and pay out cable as the boat moves astern with the wind.

Setting

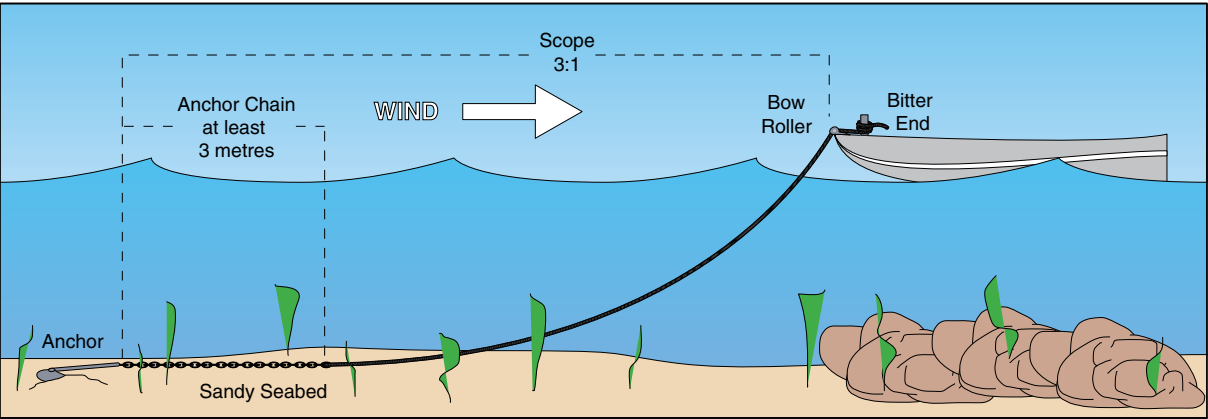
When the full scope is out, secure the cable and give the engine a short burst in reverse to ensure that the anchor has bedded in.

The scope

The critical element of anchoring is to have enough cable out – enough scope is the jargon. The scope is the ratio of the length of cable used for the depth of water. The absolute minimum is three times the depth of water, and five or seven is better. Strong current or wind or a choppy sea put more load on the cable and make a bigger scope more desirable.

Recommended scope

Condition	Scope
Calm – fair	3:1
Fair – moderate	5:1
Moderate – rough	7:1



The length of the anchor line is dependent on the depth of the water and the prevailing conditions.

**Monitoring**

Once the anchor has set and bedded in, you should take a few bearings or line up some objects (transits) to check that the anchor is not dragging. If you notice that you are drifting off the bearing and you suspect that the anchor is dragging, place your hand on the cable and feel for any signs of the anchor bouncing along the bottom. This should confirm or reject any suspicions you may have. If the anchor is dragging and you have enough room, try paying out more cable. In most cases by decreasing the angle between the anchor and the boat (ie letting out more line) will be all that is required to get the anchor to bite.

**Securing the anchor cable**

The very end of the anchor cable should be secured within the vessel to prevent loss of the anchor. If not using the whole cable, the chosen length should be secured to deck hardware.

**Retrieving the anchor**

There is no need to over exert yourself by pulling the boat up to the anchor: let the motor do the job while you – or your winch – retrieve the cable. You may need to indicate to the driver which way to steer.

**Snagged**

When the cable is vertical, it may be necessary to take a turn of it around the bitts and let the engine power break the anchor out of the bottom. If the anchor will not break out, slacken the cable, back off, and approach the anchor from different directions.

**Maintenance**

Your anchor and its cable (rope and chain) are part of your safety gear and should be ready to run at any time. A common problem with free running is the way the rope is coiled. If you coil the rope on the deck or ground and then drop it into the cable well or box, you must make sure that when the anchor is dropped it will be taking rope from the top of the coil – this may require you to turn the coil over. Taking the rope from the bottom of the coil will cause kinks and tangles.

**Keep chain / rope tidy**

Coil the rope and chain clockwise (rope may develop kinks otherwise) into the cable well or the dedicated box – ready for instant use. It is best to secure the anchor away from the cable to prevent it passing through a loop and tangling.



*Anchor cable should be coiled neatly when retrieved so that it can be ready for instant use.*

## Rules and regulations

### Vessel to be equipped with efficient anchor and line

The owner of a vessel must ensure that the vessel, while being navigated outside of protected waters is equipped with an efficient anchor and line.

### Channels and leads

Anchoring is prohibited in any channel, fairway, passage or leading lines unless you are in distress or obtain the permission of DoT.

### Submarine cables

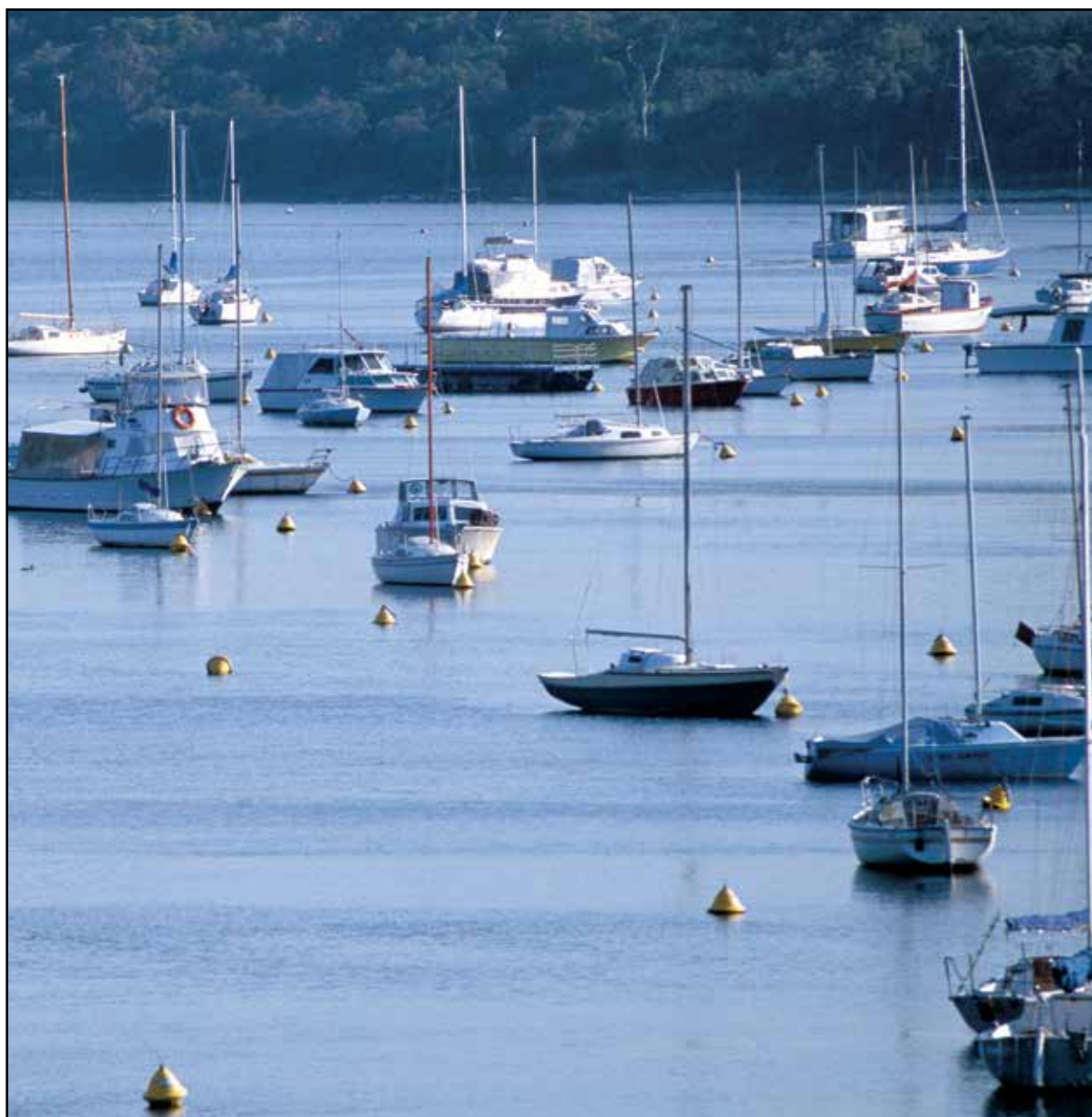
Anchoring is prohibited in the vicinity of telephone, submarine and power cables laid on the seabed. These anchoring prohibited areas are marked on marine charts and must be complied with.

### Mooring areas

Anchoring is not recommended in mooring areas. You could foul your anchor on the moorings and, because the spacing of moorings is usually only a little more than needed for the vessels on them to swing clear of each other, you would be likely to hit other boats.

### Ports

Ports have individual rules for small craft using their waters. The overwhelming intent is to avoid any conflict with large commercial vessels, so ensure that you do not anchor anywhere near where these vessels pass.



Anchoring is not recommended in mooring areas. You could foul your anchor on the moorings.



## Life Jackets

### Life jackets (PFDs) – who must carry them?

Vessels operating in waters other than, *the waters contained in any lake, river or estuary, or by any breakwater, but does not include the waters of Cambridge Gulf or Lake Argyle*, must carry an approved life jacket for each person on board. Each life jacket must suit the weight of the person for whom it is intended, be maintained in a good condition and kept in an easily accessible place.

### Life jacket types

#### PFD Type 1 – also known as Level 100 or 150

This provides the highest level of buoyancy, designed to keep the wearer's head above and out of the water when unconscious. They are mainly used when boating in open waters. They must comply with relevant Australian or overseas standards AS 1512 or AS 4758 Level 150 or 100. There are two kinds of Type 1 – those with fixed buoyancy and those which are inflatable, water or manually activated.



AS 1512, PFD Type 1 or AS 4758 Level 100 or higher.

#### PFD Type 2 – also known as Level 50

This is a buoyancy vest and is not designed to keep the wearer's head above and out of the water but are manufactured using high-visibility colours and in comfortable styles.

They are mainly used when boating in more sheltered enclosed or inland waters. A Type 2 life jacket must comply with the relevant Australian or overseas standards AS 11499 or AS 4758 Level 50.



AS 11499, PFD Type 2 or AS 4758 Level 50.

#### PFD Type 3 – also known as Level 50S

This is a buoyancy vest with the same overall buoyancy as a Type 2 life jacket. It is not required to be made in high-visibility colours.

A Type 3 life jacket is mainly used for aquatic sports such as wake boarding and water skiing where comfort and style are important. A Type 3 life jacket must comply with the relevant Australian or overseas standards AS 2260 or AS 4758 Level 50S.



AS 2260, Type 3 or AS 4758 Level 50S.

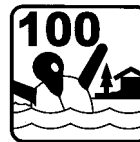
### Australian Standard 4758

Jackets manufactured to Australian Standard 4758 incorporate advances in design and manufacturing that closely align with international standards.

This new standard does not make existing life jackets obsolete: provided they are in good condition PFDs manufactured to the earlier standards will remain acceptable. They will continue to be on sale for a considerable time.



A Level 150 has increased performance characteristics compared to most PFD Type 1.



A Level 100 is similar to a PFD Type 1



A Level 50 is similar to a PFD Type 2



A Level 50S is similar to a PFD Type 3



### Maintaining life jackets

You should check the condition of your life jackets periodically. Check for cuts and tears that could let water enter the jacket and rot the buoyant material. Check that the tabs are in good condition and not frayed.

### Inflatable life jackets

Inflatable life jackets are becoming increasingly popular.

These CO2 inflated garments are lighter and less cumbersome than conventional foam life jackets and are quite versatile – they're even made as wet weather jackets and windproof vests.

However boaters should be particularly aware of the added maintenance requirements that come with this style of jacket as well as the need for detailed crew and passenger briefing on their operation.

Care should also be taken when purchasing an inflatable jacket to ensure that it conforms with Australian Standards - AS 1512 (life jacket Type 1) or AS 4758 (Level 150 or Level 100). This will be clearly marked on the jacket.

As life jackets spend most of their time in a harsh environment (particularly with saltwater boaters), it is important that jackets are serviced annually by an accredited service centre or the original manufacturer. This will ensure that the jacket is in good working order. When they are serviced, checks will be carried out to ensure the bladder, reflective tapes, buckles and straps are in working order, and that the inflation system and oral inflation tube are operating correctly.

Inflatable jackets are certainly very convenient but remember to be diligent with your checks and undertake regular servicing to ensure it will work when you need it.

You should follow the manufacturer's instructions or, if the manufacturer doesn't specify, you should have your life jacket serviced at least every 12 months.

### When to wear life jackets

DoT encourages you to wear your life jacket at all time while boating and especially in the following circumstances:

- at the first sign of bad weather;
- between sunset and sunrise or during restricted visibility;
- when operating in unfamiliar waters;
- when operating with a following sea;
- when boating alone (this is especially recommended);
- at all times on children under 10 years; or
- if you are a poor swimmer.

Practise putting them on in the dark and in the water – it is harder than you think!

### Choosing a life jacket

#### Size and weight

Infants: because of the varying weight distribution of babies it is difficult to put flotation in the right places; children less than about a year old cannot be adequately catered for and should not go afloat.

For older children, there are three main things to look for:

- the weight range on the life jacket's label agrees with the child's weight;
- the life jacket is a snug fit (loose life jackets work poorly); and
- the child is comfortable while wearing it.

For adults, too, a snug fit is important.

As for comfort, generally the less money you pay, the more uncomfortable the life jacket.



## Distress Flares

### Flares – who must carry them?

All vessels operating outside protected waters must carry flares. Which type you need depends on how far offshore you go.

**For inshore waters** (within five nautical miles of the shore), you will need:

- two hand-held red flares or two parachute flares; and
- two hand-held orange smoke flares or one orange smoke canister.



*Inshore flare kit.*

**For offshore waters** (more than five nautical miles off the shore), you will need:

- two parachute flares; and
- two hand-held orange smoke flares or one orange smoke canister.



*Offshore flare kit.*

If you operate both inshore and offshore you only need to carry the offshore set of flares.

### AS/NZ Standard

There are three main types of distress flares approved for use in WA. All of them must be manufactured to either the Australian Uniform Shipping Laws Code or to Australian Standard AS 2092.

### Red hand-held flares

These are designed for use both night and day and burn for about 45 seconds at 15,000 candle power. Potential sighting range at night is 10-12 km and about 4-6 km during the day.



*Red hand-held flare.*

### Orange hand-held smoke flares

These are designed for day use only and have no luminosity. They emit a cloud of orange smoke. Orange hand held flares burn for about 60 seconds. The buoyant canister, which is safe for use in petrol or oil covered water, burns for about three minutes. Potential sighting range by day is 4 km, although this can drop to less than 1 km in a fresh breeze. However, these flares are especially visible from aircraft, even on windy days.



*Orange hand-held flare.*

### Red parachute distress rockets

These are designed for use both night and day. They project a rocket to 300 metres high and then deploy a parachute-suspended red flare, which burns for about 40 seconds at 30,000 candle power. Potential sighting range is 15 km by day and 40 km at night.



*Red parachute distress rocket.*

### Know how to use them

Flares are best used when you believe there is chance of it being seen.

The means used to fire flares vary widely between flare types and between manufacturers. The firing instructions are always printed on the flare, and you should be familiar with your own flares' methods. Hand-held red flares, especially, burn very hot and may spill glowing embers. When using them hold them downwind so that nothing spills into the boat, and tilt them in your hand so nothing burns you.

### Handling and storage

Flares should always be readily accessible, stored in a waterproof container, in a place where they don't receive too much pounding in rough conditions, away from dampness and heat sources and readily accessible. Avoid storage above 60 degrees Celsius.



*Flares should always be readily accessible and stored in a waterproof container.*

### Expiry dates

Your flares must be maintained in serviceable condition at all times and not be outside their expiry date.

Check them regularly to ensure they have not been rendered un-serviceable by exposure to moisture. Mildew, or bubbling of paper coatings may indicate this.

### Unauthorised use of flares

There are severe penalties for the improper use of flares. Flares have a very serious purpose.

Falsely indicating distress rightly carries a severe penalty, but it also wastes a lot of time and resources – possibly weakening the ability to respond to a genuine emergency.

Do not leave flares in your boat when it is not in use, and keep them away from children.

### Disposal

Do not discard un-serviceable flares in general rubbish collections or land fill. Please contact DoT on 1300 863 308 for disposal locations.

## Emergency Position Indicating Radio Beacons (EPIRBs)

### What is a distress beacon?

A distress beacon is an electronic device that, when activated in a life-threatening situation, assists rescue authorities in their search to locate those in distress.

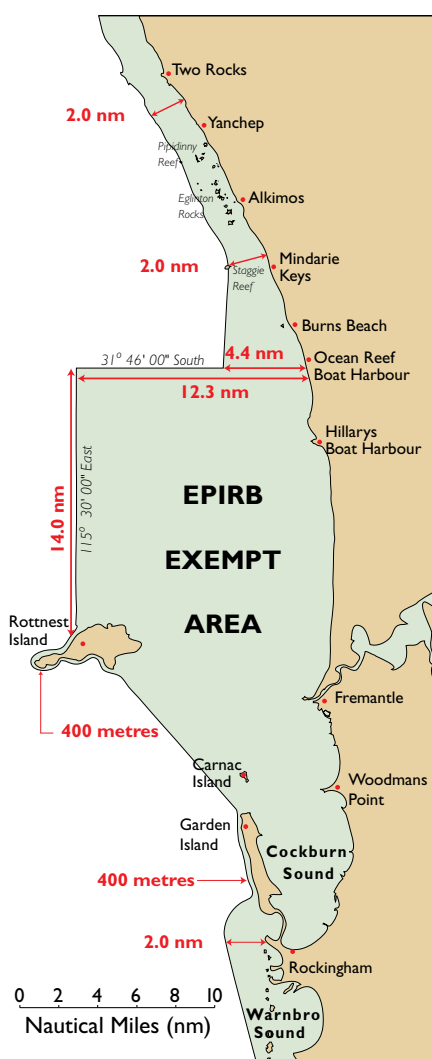
### What do EPIRBs do?

The EPIRB transmits a signal to a family of dedicated satellites for re-transmitting to ground stations for alerting search and rescue authorities.

### Who must carry an EPIRB?

All recreational vessels operating more than two nautical miles from the mainland shore or more than 400 metres from an island located more than two nautical miles from shore are required by law to carry a marine approved EPIRB.

You are not required to carry an EPIRB if you are operating within the Metropolitan EPIRB Exempt Area as indicated below.



Metropolitan EPIRB exempt zone.

### The three types of Distress Beacons

1. **Emergency Position Indicating Radio Beacons (EPIRB)** used in ships and boats;
2. **Emergency Locator Transmitters (ELT)** used in aircraft; and
3. **Personal Locator Beacons (PLB)** for personal use by bushwalkers, four-wheel drivers, other adventurers on land, employees working in remote areas, crew in boats and aircrew.

### AS/NZ Standard (Marine Standard)

Only EPIRBs that display 406 MHz (AS/NZS 4280.1) standards are approved for marine use.

EPIRBs are designed to float in the water to optimise the signal to the satellite. Once activated an EPIRB is required to operate for a minimum of 48 hours continuously. An EPIRB has a lanyard that is used to secure it to something that is not going to sink so that it can float free.

*Note: As of February 2009, the 121.5/243 MHz EPIRB ceased to be monitored. Owners of 121.5/243 MHz EPIRBs need to ensure that they replace them with a marine approved 406 MHz EPIRB.*

### Registration

406MHz EPIRBs must be registered through the Australian Maritime Safety Authority (AMSA). The recorded vessel details aid the rescue and also minimise false alarms.

The 406 MHz EPIRB registration can be completed online at the AMSA website: [www.amsa.gov.au/beacons](http://www.amsa.gov.au/beacons).

### Registration sticker

AMSA issues registration stickers to provide distress beacon owners and marine inspectors with proof of current registration. This registration sticker must be affixed to the beacon. If a current sticker is not found affixed to a beacon during a safety equipment inspection you may be fined.

### Expiry dates, batteries and servicing

EPIRBs have expiry dates. To be an acceptable safety item, your unit must be serviced by the manufacturer/agent before that date. The service will include replacement of the battery. The manufacturer/agent will provide a new expiry date once the unit has been serviced.



### When to activate a distress beacon

Distress beacons are for use only in life-threatening situations. In the event of an emergency, you should first try to signal other people in your area using radios, flares or other methods of attracting attention.

### If activated by accident

If an EPIRB is activated by accident, the most important thing is to turn it off and let AMSA know as soon as you can on freecall 1800 641 792, or via the nearest marine radio station. There is no penalty for inadvertent activations.

### Distress beacon batteries

Distress beacon batteries need to be replaced before the expiry date noted on the label of the beacon. This will ensure that the beacon will transmit for the minimum time required once activated. Battery life varies from model to model. Batteries should only be replaced by the manufacturer or their Australian agent.

### Storage

Store EPIRBs in an accessible place where they can be retrieved easily, but away from areas where they might be knocked or accidentally activated.

### Important points about EPIRBs

Ensure the EPIRB container is not cracked or showing signs of damage and that the batteries are within the expiry date.

Use the test switch at least once a month to verify power/operation.

Keep it accessible, and ensure that it cannot be accidentally activated by movement.

### Unauthorised use of EPIRBs

EPIRBs have a very serious purpose. Falsely indicating distress rightly carries a severe penalty, but it also wastes a lot of time and resources – possibly weakening the ability to respond to a genuine emergency. When you are not using your boat, removing your equipment and giving it secure storage will help prevent unauthorised use. Visit our website [www.transport.wa.gov.au/imarine/rst](http://www.transport.wa.gov.au/imarine/rst) for more information.

# EPIRBs



Many brands of 406 MHz EPIRBs are available.

## Radios

### Radios – who must carry one?

You must carry a marine band two-way radio if you go more than five nautical miles from the mainland shore. The choice of radio is up to you.

### Types of marine radios

There are three types of marine radios:

#### 27 MHz

These are cheap, easy to operate transceivers and are common in small boats. Their range is essentially line-of-sight and they are prone to interference noise. These radios are good for boat-to-boat communications and are monitored, at least during daylight hours, by most volunteer marine rescue groups. The emergency and call up channel is channel 88. Leave the radio on this channel to monitor any emergency traffic and respond to calls. Establish communications on channel 88, and then switch to another channel to have your conversation. Channel 86 is a supplementary distress frequency.

Marine rescue groups monitor the distress frequencies and their own working frequency.

Most 27 MHz radios have a dual watch capability where channel 88 and another channel can be monitored at the same time.



27 MHz radios and operators do not require a licence.

#### VHF

These radios are a little more expensive but also easy to operate. Their range is line-of-sight (extended by high aerials and repeater stations) with a very high quality signal. The emergency and call up channel is channel 16. Leave the radio on this channel to monitor any emergency traffic and respond to any calls. Establish communications on channel 16, then switch to another channel to have your conversation. Channel 67 is a supplementary distress channel. Rescue groups monitor the distress channel and their own working channel.

VHF radios have a dual watch capability where channel 16 and another channel can be monitored at the same time.



An operator licence is required to operate a VHF marine radio.

#### MF/HF

These radios have a much greater communication range (thousands of nautical miles) for vessels travelling long distances from shore. They are much more expensive and more difficult to operate. Reception is not always reliable and can be of low quality.

A 24 hour, seven-days-a-week service operated from the Water Police Coordination Centre in North Fremantle monitors the 4125, 6215 and 8291 kHz distress and calling frequencies. This HF service covers WA coastal waters within 200 nautical miles of the shore from two new transceiver sites, one at Canning Mills in Perth (call sign COAST RADIO PERTH) and the other at Port Hedland (call sign COAST RADIO HEDLAND). The Water Police also broadcasts relevant WA navigation warnings from Perth and Port Hedland on 8176 kHz.

The Water Police monitor and provide local weather and navigation warning broadcasts on VHF channel 16/67 at 0718 and 1918 hours Western Standard Time (WST). Severe weather warnings, when issued, are broadcast every two hours. This VHF service only covers Perth metropolitan waters within 20 nautical miles of the shore.



MF/HF radios require both the radio and the operator to be licensed.

### Licensing requirements

Operators of 27 MHz marine radios do not need to be licensed. Operators of VHF and MF/HF marine radios must hold a Marine Radio Operator's Certificate of Proficiency. Courses for this qualification are run by maritime colleges and volunteer groups.

Encourage others on board to get a working knowledge of the radio for emergency use.

### Station licence

A vessel fitted with MF/HF marine radio must hold an individual station licence (renewable each year). This will allocate a radio call-sign to that vessel.

### Operating Procedure

Standard radio procedures are used internationally. These are explained on the Australian Communication Management Authorities website: [www.acma.gov.au/WEB/STANDARD/pc=PC\\_312420](http://www.acma.gov.au/WEB/STANDARD/pc=PC_312420)

### Radio use – rules and operating hints

- The radio's squelch control not only removes background noise, it also weakens incoming signals. Tune it until it just suppresses the background noise.
- Listen before transmitting to avoid interfering with another station calling on the same frequency.
- Always use your call sign and/or the name of your boat for identification.
- For normal (non-distress/urgency) messages, ask to switch to a working channel once you have contacted the other station.
- Keep your message brief and clear.
- Stop transmitting when requested to do so by a local marine radio station.
- Always return your radio to either VHF channel 16 or 27.88MHz when you have completed a call on another frequency.
- Do not transmit unnecessarily or allow children to play with the radio.

### Mobile phone is no substitute

- Mobile telephones, although useful as a backup communications system, cannot replace a marine radio.
- Other boats in the area cannot hear emergency calls made on mobile telephones. A radio call is broadcast and nearby vessels tuned to the frequencies can provide a quicker response than boats called from the shore.
- Mobile telephones are difficult to locate using direction finding equipment; where as a marine radio is much easier for searchers to locate.
- Marine radio provides better coverage with fewer shadow areas.
- Marine radio batteries are heavy duty and last longer than mobile telephone batteries.
- There is no need to remember phone numbers.
- If your radio is unusable – you are in a life raft, or sitting on an upturned boat – a mobile phone will be most welcome.



**Distress call**

The distress call Mayday may be used only if the boat is threatened by grave and imminent danger – for example, sinking or on fire – and immediate assistance is required. This distress call has absolute priority over all other transmissions and may be transmitted only on the authority of the skipper or the person responsible for the safety of your vessel.

A Mayday call on one of the distress frequencies will attract the attention of land stations and other vessels in your area. Stay calm, explain the problem and give position and distress information clearly.

**Distress or urgency**

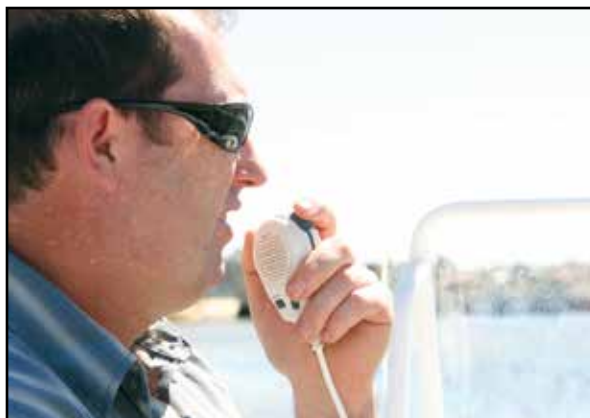
When transmitting a distress or urgency message, stay on VHF channel 16 or 27.88 MHz and do not change unless directed to by the local marine radio station – the rescuing vessel will communicate with you on that channel.

- Specify the nature of assistance you need.
- Follow directions of rescuers.
- Follow any instructions marine rescue or the rescuing vessel give you.
- Notify marine rescue if the situation changes or the danger has passed.

**Silence periods**

To increase the chances of a weak distress transmission being received, three-minute periods of radio silence are observed on the hour and half hour on distress channels.

With the exception of distress traffic, all transmissions must cease during silence periods.



*Radios provide a vital link in an emergency situation.*

**Mayday****Mayday procedure:**

- "Mayday, Mayday, Mayday"
- "This is [vessel name and/or call sign if you have one]" (spoken three times)
- "Mayday [vessel name and/or call sign if you have one]"
- "My position is ... [details of the vessel's position]"
- "My vessel is ... [nature of distress and assistance required is identified]"
- "I have ... [other information including number of persons on board]"

This call can be repeated as often as necessary until answered. If no answer is received on distress frequencies, repeat the call on any frequency which might attract attention.

**Mayday relay**

If you hear a distress (Mayday) call and a coast station does not answer, render assistance where reasonable or attempt to relay the message.



*Mayday should be used only if the vessel is in grave and imminent danger.*



### Pan Pan urgency call

The urgency call should be used when the distress call cannot be justified but there is an urgent message to transmit concerning the safety of the vessel or the safety of a person (eg mechanical breakdown, medical emergency or a man overboard).

#### Pan Pan procedure:

- "Pan Pan, Pan Pan, Pan Pan"
- "Hello all stations, hello all stations, hello all stations"
- "This is [vessel name and/or call sign if you have one]" (spoken three times)
- "My position is ... [details of the vessel's position]"
- "I require... [details of assistance required and other information]"

Urgency calls can be made on a distress frequency or any other frequency which may attract attention.



*Pan Pan should be used for an urgency call.*

### Safety call – Securite (Saycure-e-tay)

The safety call could be made from a vessel for such messages as a warning of a partly submerged object. However, a safety call is more likely to be made by a coast station or marine rescue group and may include important strong weather warnings.

#### Safety call procedure:

- "Saycure-e-tay, Saycure-e-tay, Saycure-e-tay"
- "Hello all stations, Hello all stations, Hello all stations"
- "This is .... [vessel name and/or call sign if you have one]" (spoken three times)
- "A hazard exists ..... [Details of the warning or announcement]"

Safety calls can be announced on a distress frequency like VHF 16. However, change to channel 67 or an appropriate working frequency to broadcast the actual safety message.



*Securite calls can be used to report marine hazards.*

### Routine call

When making a routine call to another vessel or coast station, state clearly:

- "Hello ... [the boat/group you are calling]" (spoken three times)
- "This is ... [vessel name and/or call sign if you have one]" (spoken three times)
- "Message..., [your message], over"
- Await response.

The aim is to get the message through clearly, precisely and quickly.

**Radio problem checklist****Equipment:**

- Is the correct frequency/channel selected?
- Is the volume (AF gain) adjusted correctly?
- Is the squelch adjusted correctly?
- Is the RF gain set to maximum sensitivity?
- Power supply – is the battery fully charged?
- Antenna – are the leads and whip intact, not corroded, have proper earthing and connections in good order?

**Procedure:**

- Time – is the other station keeping a listening watch?
- Is a silence period in force?
- HF – is the set tuned to the right frequency for the ship's position and time of day?
- Sched times – is the other station busy with a routine broadcast?

If these checks have been completed and there is still no response, another channel or frequency should be tried. Delays may arise because shore station operators are busy on other circuits or handling emergency communications. In all circumstances, listen before transmitting.

**Unauthorised use of radios**

Marine radios have a very serious purpose. Falsely indicating distress rightly carries a severe penalty, but it also wastes a lot of time and resources – possibly weakening the ability to respond to a genuine emergency. When you are not using your boat, removing your equipment and giving it secure storage will help prevent unauthorised use.



Department of  
Transport

## Remember to LOG OFF!



### When you return

VHF	Ch16	Calling & emergency
<b>27 MHz</b>	27.86	Alternate emergency
	27.88	Calling & emergency
	27.90	VSSR groups
	27.91	Other clubs
	27.94	Club events
	27.96	Boat to Boat

*Always remember to log off when you return.*

## Self Test Questions

- Q1. Where should safety equipment, such as flares and life jackets be stowed in a vessel?**
- A. *In readily accessible positions protected from the sea and weather.*
  - B. *In locked compartments.*
  - C. *Away from passengers who might accidentally damage them.*
  - D. *No particular place as long as they are on board the vessel.*
- Q2. What items of safety equipment MUST be carried on a vessel operating in unprotected waters, more than five nautical miles from the coast, outside of the Perth metropolitan area?**
- A. *Personal flotation device and bailer/bilge pump.*
  - B. *Personal flotation device, bailer/bilge pump and anchor.*
  - C. *Personal flotation device, bailer/bilge pump, anchor and flares.*
  - D. *Personal flotation device, bailer/bilge pump, anchor, flares and EPIRB and radio.*
- Q3. Fire extinguishers must be carried on:**
- A. *All vessels.*
  - B. *Vessels that have an inboard motor.*
  - C. *Speed boats.*
  - D. *Vessels that have an outboard motor.*
- Q4. When anchoring a vessel, you should consider:**
- A. *The length of anchor line.*
  - B. *The proximity of other vessels.*
  - C. *Any drift.*
  - D. *All of the above.*
- Q5. How many personal flotation devices (PFDs) must be carried on board a vessel in the ocean unprotected waters?**
- A. *One for each person.*
  - B. *Four.*
  - C. *Six.*
  - D. *At least one.*
- Q6. Other than using your radio in a distress situation, what is the most effective way of attracting attention at night?**
- A. *Waving arms up and down.*
  - B. *Letting off an orange smoke flare.*
  - C. *Letting off a red hand-held flare.*
  - D. *All of the above.*
- Q7. When should you activate your EPIRB?**
- A. *When the motor has cut out and it won't restart.*
  - B. *Only where human life is in grave and imminent danger, and only after all other means of indicating distress such as flares and radio have been used.*
  - C. *Before using flares and radio to indicate distress.*
  - D. *All of the above.*
- Q8. When must an approved marine band radio be carried?**
- A. *On all vessels on all waters.*
  - B. *On all vessels over five metres.*
  - C. *On all vessels proceeding more than five nautical miles from the coastline.*
  - D. *On all vessels in isolated areas.*
- Q9. What do the words "Pan Pan" indicate when said at the start of a radio message?**
- A. *A very urgent message follows concerning the safety of a vessel or person.*
  - B. *A vessel is in grave and imminent danger.*
  - C. *A navigational warning is about to be announced.*
  - D. *All of the above.*

Answers to the self test questions can be found on page 101.

## Trip Planning

Plan for even the smallest trip – the safety and the success of any boating trip depends as much on what you do before you leave as on what you do once you are at sea.

Planning starts with confidence in yourself, and in a seaworthy vessel.

At the end of this section, skippers should know how to reduce incidents at sea through the application of a trip plan.

### Seaworthy vessel and skipper

A seaworthy vessel is in good condition, suitable and properly equipped for the planned trip, and skippered by a person who accepts the responsibility that goes with the job.



*The skipper is responsible for the passengers' safety.*

### Responsibility

The skipper is responsible for the safety of the vessel and the people on it. Before you go boating consider the following:

- Are you confident of your abilities as a skipper, and do you realise your responsibilities?
- If you have passengers with you, are you undertaking a trip you have done before?
- Is the trip appropriate to the ages of your passengers?
- Check the weather and tides. If in doubt don't go.
- Study a chart of the waters you intend cruising.
- Tell someone where you plan to go and when you intend to return. If your plans change, let them know.
- Check that all your safety gear and extras are on board, in good shape and in reach.
- Check that you have more than enough fuel.

### Suitability

Some boats should never go outside the inshore reefs – their size, hull shape and general design do not suit them to the exposed ocean. Seek the advice of experienced people on the capabilities of your vessel.

### Loading

Determine that your boat is not overloaded. Even a boat that is not overloaded may be uncomfortably crowded, and that will make your passengers uncomfortable.



*Overloading can seriously affect the vessel's stability.*

### Seasickness and sunburn

Is your boat suitable for the trip, and is the trip suitable for the passengers? Children may fret on a long trip, first timers may be nervous going far offshore. Are there any special medical problems? Do they have their medication with them? Are they prone to seasickness? If there is an injury on board, do you have a first aid kit and the skills to use it?

You should ensure that everybody has protection from the sun: adequate clothing, and both hats and sun block – reflected sunlight gets below hat brims.



*Don't forget to Slip, Slop, Slap.*



### Motor check

The maintenance section of this workbook explains the typical service and checks your motor will need. Before each trip, a good idea for outboard motors – particularly older ones – is to attach a flushing device and test start the motor (before leaving home).

### Fuel for the trip

You can work out your likely fuel consumption from your vessel's history. Record the hours the motor runs for on a trip and the litres needed to top up the tank; divide the hours run into the litres use and this gives you a litres per hour (lph) consumption rate.

To calculate the minimum litres needed for a trip; multiply the litres per hour by the estimated duration of the voyage.

### For example:

If you travel for 2 hours and require 10 litres to top up the tank ( $10\text{lt} \div 2\text{hr} = 5\text{lph}$ ) your fuel consumption is 5 litres per hour.

If you intend to travel on a 4 hour voyage and use 5lph (5lph multiplied by 4hr = 20lt) you will require 20 litres for the voyage.

### Reserve fuel required

Fuel consumption varies greatly, especially with a change in the sea conditions. Aim to carry 50 per cent more fuel than you expect to use for your planned length and distance of trip. If this means you have to carry spare fuel in a portable container, use an approved one and make sure you have a means of transferring the fuel, such as a funnel.



*Never leave the refuelling nozzle unattended.*

## Weather

You go boating for pleasure, and there is not much pleasure in doing it in bad weather. You need to be able to cope with unexpected changes in the weather, but even more importantly you need to know the range of conditions you and your vessel are happy with, and the conditions that will keep you at home. Learn how to read the weather map. By following it daily you get the feel for trends in the weather and can use it for planning ahead.

### Current forecast

Before actually starting the trip, get the most up to date forecast available.

### Sources of weather information

#### Internet

For the most current and a full range of weather information visit the Bureau of Meteorology's website: [www.bom.gov.au](http://www.bom.gov.au).

#### Public broadcast radio/television

The Bureau of Meteorology (BoM) sends coastal waters forecasts and warnings to the ABC and commercial networks (both city and regional). The stations usually announce the time BoM issued the forecast: this is important – older forecasts are less valuable.

#### Marine radio

Weather and navigation warnings covering the Perth metropolitan waters (within 20 nautical miles) are broadcast on VHF Channels 16 and 67 at 0718 and 1918 hours western standard time by the WA Water Police.

Volunteer marine search and rescue groups operate within normal recreational boating hours. They provide weather information on VHF channels 16 and 67 and/or on 27.88 MHz. BoM provides a limited VHF weather service for some parts of regional WA. For details visit: [www.bom.gov.au/marine/images/wa.pdf](http://www.bom.gov.au/marine/images/wa.pdf)

### Recorded telephone services

BoM has recorded services via Weathercall for coastal waters forecasts and warnings.

Services include:

Full State Service

1900 955 366

Perth Metropolitan Service

1900 926 149

Perth Local Waters Service

1900 955 350

WA Marine Service

1900 926 150

Northern WA Coastal Waters Service

1900 969 901

Western WA Coastal Waters Service

1900 969 902

Southern WA Coastal Waters Service

1900 969 903

WA General Warnings Service

1900 955 371

WA Tropical Cyclone Information

1300 659 210

WA Coastal Marine Warnings

1300 659 223

### Weather by fax

BoM Weather by Fax provides forecasts, observations and warnings including weather charts (updated three hourly), satellite photos (updated hourly), weather radar reports, the latest warnings, routine coastal waters forecasts and the latest actual reports.

Set your fax machine in poll receive mode and dial 1902 935 200 for the main directory.

## The weather map – synoptic charts

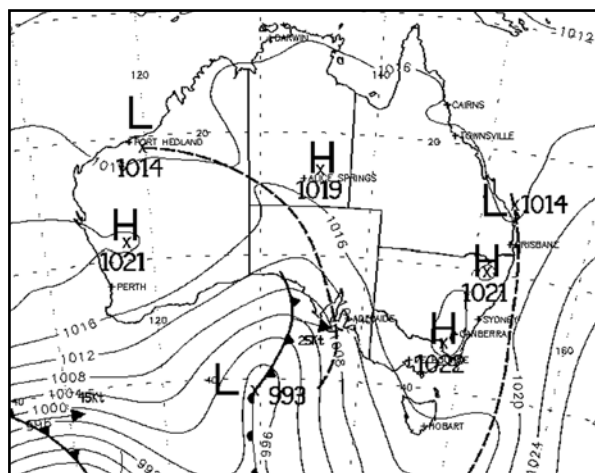
You normally see the weather map (also called a synoptic chart) on television or in the newspaper. It will usually be older information than you can get from other forecast sources, but it gives a good picture of what is happening and is likely to happen.

### Winds

Wind is caused by the movement of air from high pressure to low pressure systems, but it does not flow directly from one to the other. It blows more nearly along the pressure contour lines (called isobars) you find on weather maps. In the southern hemisphere this is in a clockwise direction around low pressure systems and anti clockwise around highs.

The bigger the difference in pressure of the systems, the stronger the wind. The number of isobars, and their closeness to each other, indicate the pressure differences.

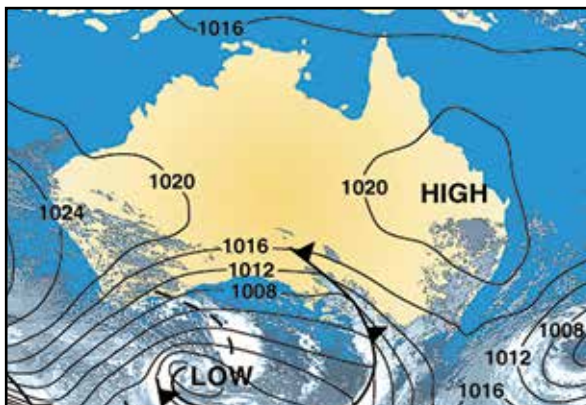
When estimating the progress of the pressure systems, you can reasonably assume that a low will move the width of Australia in two or three days.



The forecast strength of the wind can be determined by the closeness of the isobars.

## Cold fronts

The line with spikes on it is a cold front – commonly associated with winter lows. Ahead of the front you can expect squalls followed by rain. The wind typically changes direction at the front (shown by the bend in the isobars) and strengthens.



Learn how to read a weather map to better predict the weather.

## Forecast content

A forecast gives a general description of the expected weather in the forecast period plus outlook including warnings and other specific information.

### Strong wind warnings

Small craft warnings of strong winds are issued whenever mean wind speeds exceeding 25 knots are expected. For any mean wind speed forecast, gusts can be 40 per cent higher, so the very smallest of strong winds will produce gusts of 35 knots.

### Severe weather

The northwest of WA is one of the most cyclone prone coasts anywhere in the world. The cyclone season extends from the months of November through to April, but most of the coastal impacts occur between January and March.

No vessel should be at sea within several hundred miles of a cyclone.





**Wind strength and direction**

You are interested in wind speed and direction mainly because of the waves the wind will build. Wave height depends on wind speed, length of time the wind blows (duration) and how far over the water it blows (fetch). Wind off the land will produce smaller waves inshore because of the limited fetch; they will also be steep and close together – a feature of short fetch. If you operate in the shelter of islands you will also get smaller waves than the forecast, which assumes no shelter.

**Sea and land breezes**

Local winds such as sea breezes blow for only a few hours over waters close to shore, so the waves they cause are lower than the large scale winds. However, if the sea breeze blows from a similar direction to the existing wind, it will join forces and build bigger waves.

**Sea (wind waves)**

The waves caused by the wind currently blowing (the wind you can feel) are called 'sea'. A 15 knot wind (not a sea breeze) will typically produce sea about 1.5 metres high. That is the average height; you can get the occasional wave twice that high.

**Swell**

Swell is the waves caused by winds from far away. Swell travels faster than sea and crests are wider spaced. They usually look lower than they are. They can combine with sea they overtake to make a larger wave.

Swell is the waves that make breakers. The bigger the swell, the deeper the water in which they break. As a guide, the typical swell height on the west coast in summer is about 1.5 metres, which is classed as 'low swell'.



*Be sure to check your mooring equipment before the approach of a storm.*



### Sea breezes

Sea breezes are a near shore event caused by the heating of land during the day. Their strength will be partly dependent on the existing (synoptic) wind. On the west coast sea breezes come from the south west, so they will be opposed and weakened by a synoptic north easterly. The further towards south the synoptic wind, the more it will assist and strengthen the sea breeze.

### Observing the weather

Forecasts tell you the expected weather – keeping your own eye on approaching weather can confirm the forecast or can tell you that something unexpected is about to happen. Or that local conditions look like being worse than predicted.

Keep your senses open to:

- drops in temperature;
- a rising swell;
- solid cloud appearing;
- barometer falling; or
- wind changing.

In fact almost any change can mean deteriorating weather approaching.

### Coping with weather

Have an alternative trip planned for the day in case the weather is unfriendly. You may choose to operate inside the reefs or islands instead of outside.

Use your radio to keep up-to-date on forecasts, the weather can change quickly.

Trim your boat, by moving passengers or using power trim, to suit the direction of the sea. With a planing boat, generally you trim the bow down a little for a head sea, and trim it up for a following sea.

A lowering of speed or a small change in course can make a big difference to the softness of ride.

If conditions deteriorate, put on life jackets.

### Factors affecting visibility

Poor visibility can have a disturbing effect on your orientation, whether you are in open ocean or on an inlet. It also requires you to slow down and keep an even better lookout.

Mist and fog, although not common, occurs, and BoM will include predictions of it in both marine and land forecasts.

Heavy rain can seriously reduce visibility.

In summer, one of the commoner influences on visibility can be smoke from bush fires drifting out to sea with easterly winds.

### Know the conditions

The weather could limit where you go, the load you can carry safely, whether you should take inexperienced people with you or if you should stay home. Before you set off, get the latest weather forecast. Knowing the likely conditions will help you decide where the safest and most sheltered spots are.

Volunteer marine rescue groups are based in most coastal population centres and operate within normal recreational boating hours. They all provide weather information on VHF channels 16 and 67, 27MHz channel 88.



*Don't get caught out in bad weather.*

For weather information direct from the BoM phone:

WA Coastal Marine Warnings: \_\_\_\_ 1300 659 223

WA Marine Service: \_\_\_\_\_ 1900 926 150

Fax information: \_\_\_\_\_ 1902 935 200

Website: \_\_\_\_\_ [www.bom.gov.au/weather/wa](http://www.bom.gov.au/weather/wa)

## Tides

In areas of larger tides, especially the State's north, the times and ranges of the tides can determine whether launching and retrieval is possible. This information is currently available on DoT's website: [www.transport.wa.gov.au/imagine/rst](http://www.transport.wa.gov.au/imagine/rst)

Metropolitan boaters often fail to consider tides because the local range is so small. In other parts of the state, tides are large enough to make ramps unusable at certain times. The currents created by tide – known as tidal streams – can run as fast as ten knots in the Kimberley.

### Sources of tide information

Basic tidal information is often broadcast on radio and television and is included in newspapers. It is simpler and safer, however, to have a current set of tide tables.

### Tide predictions

The tide predictions provide a forecast of the time and height of high and low water for a particular day at a particular place.

The height of the tide in metres and decimals is reckoned from a theoretical datum. On charts, depths are shown measured from this datum.

### Chart Datum

As the level of the sea is constantly rising and falling, the depths shown on charts must have a common level from which they are measured. This level is the lowest predictable level to which the tide is likely to fall. It is known as chart datum.

Chart datum is not a horizontal surface but may be considered as such over a limited local area. It is the level so low that the tide will not frequently fall below. Usually defined in terms of the approximate lowest low water level. All soundings on a navigational chart are referenced to chart datum.

To be able to calculate the total depth of water, you must add the depth obtained on the chart to the tide height at that time and place.

### The weather's effects on the tide

Prolonged winds, or barometric pressure – can cause differences between the predicted and the actual tide. Low-pressure systems tend to raise sea levels and high-pressure systems tend to lower them. In general, wind will raise the sea level in the direction towards which it is blowing.



*Areas in the north of Western Australia can experience tides in excess of 10 metres, so it's always wise to check the tides.*

## Other Equipment

Make sure you have the correct safety equipment and survival gear on board your vessel for the area in which you intend to operate. This will not just be the gear the law insists on. Charts, compass, water, food, extra clothing, tools and spares, extra line for the anchor and sun protection are some of the additional items you should consider.

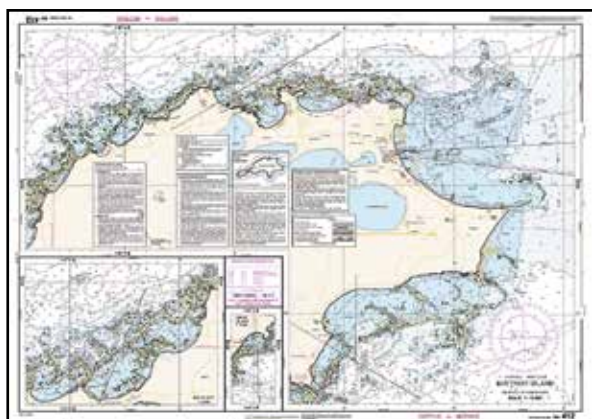
### Navigation

You should know exactly where you are going, how to get there and how long it will take to get back. Carry a chart of the area. Check on any special boating regulations for the area you plan to visit. This information is on charts, signs at boat ramps, or DoT's website: [www.transport.wa.gov.au/imagine/rst](http://www.transport.wa.gov.au/imagine/rst)

### Nautical charts

Nautical charts provide detailed information including depths, tidal range and streams, navigation hazards and anchorages. They are essential when operating in unfamiliar areas, and more than useful at any time.

With a chart and a compass you can work out your position (very important if you need to give your position to rescuers) and find a course back to shore if rain, fog, or smoke obscure the land. Charts are available on DoT's website: [www.transport.wa.gov.au/imagine/rst](http://www.transport.wa.gov.au/imagine/rst)



*A chart of the area should be carried.*

### Global Positioning Systems (GPS)

Global Positioning Systems (GPS) give an instant latitude and longitude position. They are invaluable for giving your position when using a radio to advise a shore station or other party of your position. You should also carry a chart and compass as back-up.

### Depth sounder

A depth sounder is a useful aid when approaching an anchorage or confirming chart details.

### Fire blanket

Especially if your boat has a galley, there may be times when a fire blanket is better than an extinguisher. Extinguishing a pan of burning oil or fat is one example.

### Torch

A buoyant and waterproof torch is best, and you should also carry spare bulbs and batteries. This does not substitute for navigation lights. All boats should display navigation light(s) at night in accordance with the collision regulations.



*A waterproof torch.*

### Life raft

Inflatable life rafts are expensive, but are wonderful insurance for larger vessels on longer trips or travelling well offshore. They are the most efficient means of evacuating passengers and crew from a sinking boat, and are standard equipment on commercial vessels.

### Clothing

It is always colder on the water and the sun is stronger – extra jumpers, waterproofs and sunscreen are never a waste of space.

Even on hot summer days you should carry at least a spray jacket, and preferably a jumper as well. These are even more important for children.

Clothing should not restrict your movements or significantly reduce your buoyancy. If it's cold and you need to bulk up, wear a buoyancy garment.

Check your ability to swim or float in your clothes, try it out in shallow water.



**First aid kit**

Burns, and injuries from fish hooks and gutting knives, are some of the special and not uncommon reasons for needing a first aid kit on board.



*A well-stocked first aid kit.*

**Life buoy**

Larger vessels may carry one or more life buoys, or something similar, stowed ready for throwing if a person goes overboard. It is easy to lose sight of someone in the water and in poor weather can take time to get back to them. Life buoys may have attachments including life buoy lights and buoyant lines. A light is a useful attachment.



*A life ring or life buoy and light.*

**Fresh drinking water**

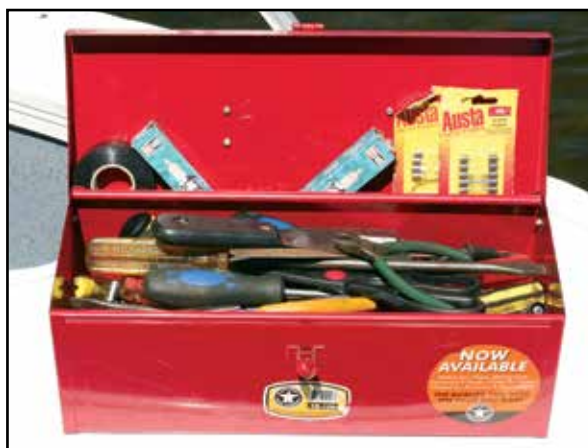
This is an essential on any vessel. Carry more than you think you will need, and replace the water frequently. Do not completely fill the container – you want it to be capable of floating.

**Provisions**

Food is not nearly as important as water, although children may have a different view, but it would certainly be a comfort when waiting for assistance. Low protein food is better as it does not make you so thirsty.

**Tool kit**

Your motor's handbook will detail other checks and small repairs you can make. Carry at least enough tools to carry out all these things.



*A well-stocked tool kit.*



## Emergency Contact

### Log on

Let someone know before you go.

This is so vital that it is one of the items included in the practical assessment.

Giving trip details to a responsible person puts duties on two people, the person to actually do something if you do not contact them by the nominated time, and you. You must make that contact when you return, and you must stick with the trip plan unless you are able to make contact during the day and advise of any change.

Some people choose to notify a neighbour or relative. If you do, you must accept that this person may not have much marine understanding. It would be best to write the plan down, and go through it with them. At the end of the plan make sure you write that they must ring the police if you don't make contact at the agreed time.

A fridge magnet is available from DoT for you to fill out your trip details on and give to a responsible person.

The most common responsible person, though, is the duty officer at your local marine rescue group, contacted by radio.

### Your radio routine will be similar to this:

Select the calling frequency of the marine rescue group, wait until you are sure you are not interrupting anyone, and then say:

*"Marine rescue, this is (vessel name and/or call sign) over."*

When marine rescue acknowledges your call say:

*"Marine rescue, this is (vessel name and/or call sign) departing Fremantle harbour at 07:15 to fish at the Rottne FADs. ETA at FADs 09:30. Estimated return time 14:30. Two persons on board, 120 litres of fuel, over."*

When marine rescue acknowledges say:

*"Thank you marine rescue, out."*

### Log off

This is as important as logging on. If you do not log off, scarce and expensive resources may be consumed in a futile search for you. The radio frequency and procedure is the same as for the log on.



*Always remember to log off once you have returned.*

**Department of  
Transport**

## Gone Boating

**I'VE GONE BOATING...**

Here are my trip details for: (date) \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

I am departing at: \_\_\_\_\_ am / pm (please circle)

I am departing from: \_\_\_\_\_

My destination is: \_\_\_\_\_

My trip intentions are: \_\_\_\_\_

Number of people onboard: (including me) \_\_\_\_\_

Fuel carried: \_\_\_\_\_ litres

I will return no later than: \_\_\_\_\_ am / pm (please circle)

**ALWAYS...**

Inform a relative or a friend of your boating plans by leaving this card with them.

If you fail to return by the time specified, they should

**CALL 08 9442 8606 IMMEDIATELY**

Place a picture of your boat here for easy identification

**Remember...**

**To check the marine weather report and ensure you and your boat are suited to the prevailing conditions.**

**To ensure you have the required safety equipment for the area you intend to go.**

**To ensure you have sufficient fuel. Aim to carry 50 per cent more fuel than you expect to use.**

**To log on and off with your local Sea Rescue Group.**

**VALUABLE Vessel INFORMATION is ON THE BACK**

Keep a whiteboard marker handy to enter fresh trip details and use a pencil to change the information on the reverse.

The 'Gone Boating' fridge magnet is available from DoT.

## Buoyancy

Almost all new trailer boats less than 6 metres have flotation – sealed air chambers or foam – to give support if the boat is swamped. How much flotation and where it is placed determine how effective the buoyancy will be.

### Basic flotation

This is enough flotation to prevent the vessel and its maximum load from sinking when swamped. It does not necessarily support its passengers safely, it may float at any attitude and just give them something to cling to while waiting for help.

### Level flotation

When swamped, a vessel with this flotation will float upright and level (unless it has been capsized), and support its maximum load and its designed complement of occupants. This could allow the vessel to be bailed or pumped dry, and vastly improves the prospects of survival.

### Australian Builders Plate

Boats built after mid 2006 must carry the Australian Builders Plate, giving vital safety information to their owners – or to help prospective owners make buying decisions.

One item sometimes overlooked is motor weight. Makers are now quoting maximum outboard weight as well as maximum power. This is just one of the safety items included on the Australian Builders Plate.

The plate must be clearly visible, and includes:

- maximum engine power;
- maximum number of people to be carried;
- load weight; and
- the boat's buoyancy performance.



*The Builder's Plate is compulsory for all vessels built after mid 2006.*

## Overloading

If your boat does not have a plate or handbook recommending a maximum complement of people, use this table as a guide.

Length of boat	Maximum number of people aboard
Less than 3m	2
3m to less than 3.5m	3
3.5m to less than 4.5m	4
4.5m to less than 5m	5
5m to less than 5.5m	6
5.5m to less than 6m	7

## Stability

Stability is the measure of a vessel's eagerness to return to the upright after being heeled, and also of how far it can safely heel. It is affected by total load, by how the load is distributed, and by how securely stowed the load is. Passengers are part of the load, and their movement can affect stability, especially in smaller boats.

- Ensure that total load, including the number of people on board, is within the specifications of the boat.
- Heavy items must be stowed low, and all items must be distributed so as not to cause a change in trim of the boat (not dip the stern or the bow).
- No items may be stowed where they can shift with the vessel's motion. Scuba cylinders for instance, which are heavy and likely to move if unrestrained, have caused stability problems and outright damage.
- Any gear that is not possible to stow securely must be restrained by straps or rope lashings.
- Water in the vessel can endanger stability, both through increasing the total load on board and through a phenomenon called free surface effect. Water free to move around the vessel has an effect on stability out of all proportion to its quantity.

## Self Test Questions

- Q1. As part of your trip plan you should ensure**
- A. *Your boat is suitable for the trip.*
  - B. *The weather and tides are favourable.*
  - C. *That all your safety gear and extras are on board, in good shape and in reach.*
  - D. *All the above.*
- Q2. The recommended additional fuel to carry for a boating trip is**
- A. *10 per cent more fuel than you expect to use.*
  - B. *20 per cent more fuel than you expect to use.*
  - C. *50 per cent more fuel than you expect to use.*
  - D. *100 per cent more fuel than you expect to use.*
- Q3. Which is the most up-to-date weather forecast available?**
- A. *Bureau of Meteorology.*
  - B. *The newspaper.*
  - C. *Last night's television news.*
  - D. *AM /FM radio.*
- Q4. Which of the following wind warnings indicates that the average wind speed is expected to be 25 to 33 knots?**
- A. *Strong wind warning.*
  - B. *Gale warning.*
  - C. *Storm warning.*
  - D. *Sea breeze.*
- Q5. When about to undertake a recreational boating trip, on what occasion is it advisable to inform relatives, friends or local authorities of your travel plans and estimated time of arrival at destination or return?**
- A. *Whenever bad weather is forecast.*
  - B. *If travelling overnight.*
  - C. *On every occasion.*
  - D. *When you go boating alone.*
- Q6. When loading your vessel with passengers and equipment for a day's outing, you should?**
- A. *Distribute the load evenly in the vessel.*
  - B. *Ensure adequate freeboard for the prevailing weather conditions and unexpected deterioration in weather conditions.*
  - C. *Restrict passengers to the recommended limit.*
  - D. *All of the above.*
- Q7. If a vessel is full of water and it has basic flotation it will**
- A. *Sink straight away.*
  - B. *Have enough flotation to prevent the boat and its maximum load from sinking.*
  - C. *Take three hours to sink.*
  - D. *Stay well above the water.*
- Q8. A low pressure system rotates in which direction?**
- A. *Clockwise direction.*
  - B. *Anti clockwise.*
  - C. *Always north.*
  - D. *Vertically.*
- Q9. Which of the following may be signs of bad weather?**
- A. *Wind shifts.*
  - B. *Increases in swell.*
  - C. *Cloud build-up.*
  - D. *All of the above.*

Answers to the self test questions can be found on page 101.

## Emergency Situations

### Types of emergency – appropriate response

Well-prepared boaters seldom have big problems at sea. These are the people who are ready to cope with the unexpected and usually avoid emergencies. But accidents still occur to the most thoughtful of people, and you need to be ready to deal with them.

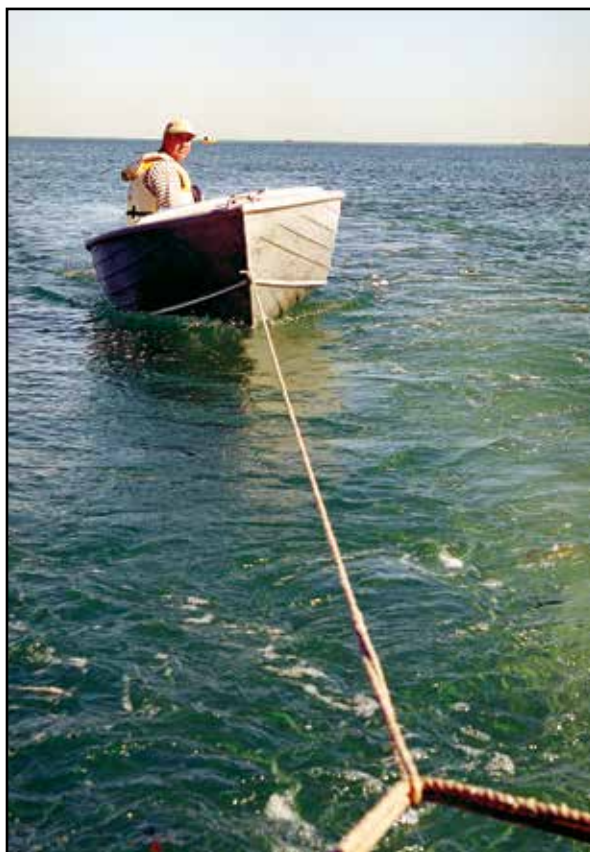
At the end of this section, skippers should have knowledge of how to prevent and deal with some of the more common boating emergencies.

### Assisting others

When you are not actually using your radio, you are required to keep it tuned either to the distress frequency or marine rescue's working frequency. This is because you must stay available to assist others. It is a legal obligation to offer help if you hear a radio distress call or see distress signals or a burning vessel.

The traditions of the sea also say that you should respond to urgency radio calls or to other requests for assistance that fall outside the distress category.

You are not obliged to offer a tow to other vessels. You can offer to stand by until Sea Rescue turns up.



*You should always try to assist others if safe to do so.*

### Leadership

The safety equipment you have to carry, and the logical extras, will go a long way towards relieving most problems. But you need thought and action as well. A prime requirement is for the skipper to be the skipper – to set an example by getting on with the job decisively and logically.

### Life jackets

Make your passengers as safe as possible. This will almost certainly include putting on life jackets, and may involve moving people to a different part of the vessel, or even preparing them to abandon the boat.

Check to make sure there is no danger of the emergency getting worse, for instance, a parted fuel line assisting the start of a fire.

Check what informal means you have of easing the emergency. As an extreme example, on more than one flooding boat, skippers have put cooling water intakes into the bilge and used the engine itself as an extra pump.

### Send distress signal

Decide as quickly as possible if your emergency needs outside help, then waste no time asking for it. The radio is almost always the best means, but a flare or waving arms might be appropriate for a nearby vessel. The flashing of a mirror or dedicated heliograph can attract the attention of a vessel or aircraft within visible range.



*Flares are a good method of indicating that you are in distress.*



## Distress signals

### Radio

The radio is usually the best means of calling for any kind of help. You are able to specify what kind of help and the level of urgency. It is also best for signalling distress. It has longer range than visual signals, can continue sending as long as there is battery power, and it lets you state your exact position – marine rescue can also home in on the signal.

### EPIRB

This is the device that will call for help even after a vessel has sunk. It can only send a distress message with few other details, but once activated it works with no assistance from you.



*In an emergency an EPIRB can provide global coverage.*

### Flares

Red hand-held flares and orange smoke flares are short range – you need to see a potential rescuer before you fire one.

Parachute rocket flares have a longer range but, ideally, you would use them in conjunction with your radio. Your rescuer might ask you to fire one to give a target to steer towards.

### Other distress signals

Other internationally recognised distress signals include:

- a gun or other explosive signal fired at intervals of about a minute;
- continuous sounding of a fog horn;
- waving – slowly raising and lowering outstretched arms;
- smoke and or flames on a vessel;
- a Mayday radio signal;
- the international code flags N over C;
- a red parachute flare or a red hand-held flare; and
- an orange smoke flare.



*The international code flags N over C are an internationally recognised distress signal*

### Phone

A mobile phone is not accepted as a substitute for a radio, but it can be a useful back up. If you have to abandon your vessel, leaving the radio behind, you should certainly take your phone with you.

# Capsize

## Capsize

Capsizes are a major cause of boating deaths.

These are among the commonest capsizing factors:

- gross overloading, or poor distribution of load;
- broaching when running with a following sea. This is made more likely by the boat not having the bow trimmed up;
- free surface effect due to water in the boat or shifting load;
- poor driving technique;
- caught by breakers on the seaward side of a reef (usually on days of bigger than normal swell); and
- caught by wind and waves with the occupants on one side pulling pots.

### Stay with vessel if possible

As always, safety of your passengers is the first priority. If the boat capsizes, make sure they are all there and make sure they stay with the boat. Most trailerable-sized boats have enough flotation to keep afloat if upturned.

If you can, turn the boat upright and bail it out. This is difficult with a dinghy – it may well be impossible

with a larger boat. If you cannot right the boat and get inside it you should try to get as much of yourselves as possible onto the hull – you will lose less body heat.

Consider getting the best swimmer to dive and remove life jackets and safety gear. Keeping the small items in a watertight container will have made this easier. Once you have your safety gear, consider the appropriate means to use to get help. Never swim away from a capsized boat.

### Sinking

Most trailer boats have flotation to cope with flooding, and seldom sink. Larger boats without flotation usually take some time to sink. Having life jackets quickly accessible, safety items and emergency provisions in a watertight drum, and water in a floating container should allow enough time to take these essentials with you.

Before abandoning the boat, attempt to send a Mayday message. Do not remove any clothing – if there is time, it is better to put more on. Once in the water activate the EPIRB.

To keep everybody together, and to conserve body heat, adopt the huddle position described under hypothermia in the first aid section (*page 76*).



*You should stay with your vessel until help arrives.*

## Grounding

Grounding is very common, with results ranging from minor scraping to sinking, injuries to fatalities. Speed and the type of bottom hit are often all that cause the difference.

### Running aground

If you do run aground, look after your passengers. Coming to a sudden stop can cause serious injuries. You may need to call for medical assistance.

Assess the damage. Is the boat leaking? If you are outboard or sterndrive powered, raise the leg and check for propeller damage.

If the boat appears serviceable, check for depth around the boat by probing with a boat hook or even getting over the side. Pushing off may be the best option for getting the boat clear, although you may need to wait for the tide to rise.

If the boat is unseaworthy or hard aground call for assistance.

### Prevention

This is a thoroughly preventable type of emergency. Knowing where you should be and where you actually are, and keeping a good lookout are the keys.

Plan your trips using a chart, and take the chart along. Ensure you will have enough water depth throughout.

Make sure you can identify all the navigation marks, and bear in mind that not all of them have lights at night.

Whenever in doubt about your position or the identity of a navigation aid, slow down.



*After grounding, assess the damage and check for leaks.*

## Breakdown

Well-maintained motors are unlikely to break down, and most breakdowns consist of the motor refusing to start rather than simply stopping.



*Poorly maintained motors are more likely to breakdown.*

### Outboard not starting

Not everything in this list applies to every outboard motor, but it is the basis of a simple troubleshooting routine.

- Does the tank have fuel? Is the air vent clear?
- Are the fuel lines un-kinked and connected?
- Is the fuel bulb hard? If not, squeeze continually.
- Does the choke close fully?
- Check the carburettor air intake.
- Is the motor cranking fast enough? Check battery connections.
- Wait five minutes and try again.
- Battery flat? Start with rope around flywheel.
- Broken starter cord? Start with rope around flywheel.
- Change spark plugs.
- Change fuses.
- Ensure kill switch is attached.

Several of the above are also logical checks to make if the motor stops.

If you are unable to restart the motor, you should, if possible, anchor to hold your position. Unless your boat is drifting into danger or has other problems, breakdown is not a reason for making a Pan Pan or Mayday call. You should call marine rescue for assistance.

## Fire Fighting

Fire prevention is preferable to fire fighting. Fires involving LP gas are invariably catastrophic, and petrol fires usually so – essentially, they are explosions rather than fires. Besides these, boats are prone to the same types and causes of fires as you get ashore.

### Some causes of fires

- Overheated oil on galley stove.
- Overloaded or incorrectly wired electrical system.
- Poor engine room housekeeping – rags in contact with turbocharger or exhaust system.
- Leaking fuel or gas lines.
- Poor refuelling technique.

Correct installation, good housekeeping, regular maintenance and good fire prevention technique can prevent most of these.

### Engine

There are boats on the water powered by petrol engines with substandard conversions to marine use. They may have inadequate means of preventing stray sparks, have second-rate fuel systems, and be in compartments with poor ventilation.

When buying a used boat with an inboard or sterndrive motor, have the motor and installation checked by a marine mechanic.

Fuel vapour is heavier than air, and will not leave a compartment without assistance. Consider having power ventilation installed.



Vapour detectors can warn of potentially explosive gas mixtures.

## LPG

LPG systems, a prime candidate for fires, must be correctly installed by a qualified person. As with petrol, the vapour is heavier than air, so the cylinder must be stowed above deck in a place where vapour spills will run over the side.

When you have finished cooking with an LPG stove, turn off the gas at the cylinder and let the gas jets keep burning until they go out. Then turn them off.

### Housekeeping

Locate your extinguishers where they are most accessible – not near the source of a potential fire – and check and maintain them.

### Keep the bilge and engine room clean

Have the installation and maintenance of all electrical, gas, diesel and petrol equipment carried out by qualified tradesmen.

Frequently make your own checks for leaks in fuel and gas systems.

### Technique

Develop a consistent routine for starting your engine. For inboards and sterndrives this should always include entering the engine room or opening the motor box, checking for leaks and sniffing as low in the bilge as you can reach. The human nose is good at detecting minute concentrations of flammable vapour.



## Refuelling

Refuelling is the most likely time for fuel spills.

When refuelling:

- turn off everything that uses electricity, gas or liquid fuel;
- send passengers ashore;
- take portable fuel tanks out of the boat;
- have a fire extinguisher near the refuelling point;
- know how much fuel you need to take and so reduce the chance of overfilling (leave space to allow for expansion of the fuel);
- if your fuel tank is metal, there must be electrical continuity between the mouth of the fuel filler pipe and the tank. The hose nozzle must stay in contact with the filler mouth while the fuel is flowing; and
- check the bilge for spillage and for the smell of fuel. Do not start the engine until all fuel smell has gone.

## Fighting a fire

The most important consideration is human life, the boat is secondary.

- Raise the alarm and make a head count.
- Get someone to make a Pan Pan radio call.
- Get someone to take charge of the safety gear and move the passengers as far as possible from the fire.
- If the fire is within an enclosed space, close all openings to reduce air supply to the fire.
- Close off fuel lines and gas lines.
- Try to put out the fire with extinguishers, fire blanket, water buckets or whatever is appropriate. The best way to deal with burning items may be simply to throw them over the side.

When the fire is apparently out, still keep an eye on it and on adjoining spaces; fires can restart. Chemical extinguishers do not cool fires – consider using water to cool after the flames are extinguished.



*Never leave the refuelling nozzle unattended.*

## First Aid

### Training

Knives, fishing gear, venomous sea life, galleys and engine spaces – as well as a range of potential accidents – provide endless opportunities for injury on board. It makes a lot of sense to take a first aid course. Back up the training by carrying a suitable first aid kit.

### Seasickness

#### Preventive measures

Check whether your passengers are prone to seasickness. If they usually take medication for it, make sure they take it at the recommended time. There are ways to limit seasickness:

- Non-medication remedies work for many people. Eating ginger or wearing an acupuncture band are popular.
- Avoid greasy food and alcohol before and during the trip.
- Sit in the lowest motion part of the boat, usually near the stern.
- Stay in the open air.

#### If seasickness strikes

Often, people are only prone to seasickness in a stationary boat. If a bad bout comes on, try getting underway again.

Bad seasickness can dehydrate people quickly. Encourage a seasick person to continually sip water.

### Hypothermia

This is the result of major heat loss from the body, causing a lowering of the body's core temperature. Immersion in cold water multiplies the rate of heat loss by many times, and being in wet clothes in cold wind can, over time, also cause hypothermia. Hypothermia is a life-threatening condition, most common in survivors of boat capsizes or sinkings, and it is made worse by physical exertion like swimming or treading water. Greatest heat loss is from the head, the armpits and from the crotch.



*The HELP and Huddle positions can slow down heat loss.*

#### Huddle/HELP position – lessening the effect

If at all possible get out of the water, or at least get out as much of yourself as you can by climbing onto a capsized hull.

If in the water, wearing a life jacket allows you to protect the heat loss areas.

The Heat Escape Lessening Position (HELP) puts your legs together and drawn up, your upper arms tight by the sides of your chest, and your head back.

The Huddle position is adopted by a group of people. Clustering close together in a circle, ribs touching, arms around each other, greatly reduces heat loss.

**Treating hypothermia**

Usually the circumstances will suggest the possibility of hypothermia if the victim seems drowsy and is cold to the touch.

Other signs include:

- faint, slow pulse;
- shallow breathing;
- confusion, with slurred speech; and
- dilated pupils.

Your aim should be to prevent further heat loss, and gradually warm the victim.

- Move the victim to a sheltered part of the boat.
- Remove wet clothing and wrap in whatever clothing, blankets etc are available.
- Dry the hair and put a beanie or similar on the head.
- Probably the best way to gently warm the victim is to share a sleeping bag and use your body's own heat. Do not rub or massage.
- Do not give alcohol.
- Make a radio call to marine rescue and ask for further advice while heading for shore at your best speed.

**Self Test Questions**

**Q1. In most circumstances if a vessel capsizes it is best to:**

- A. Swim away from the vessel.
- B. Try swimming to the shore as a group.
- C. Send the strongest swimmer to get help.
- D. Stay with the vessel.

**Q2. Most vessel groundings can be avoided by:**

- A. Planning your trips using a chart.
- B. Knowing what navigation marks look like and mean.
- C. Slowing down if you are unsure of an situation.
- D. All of the above.

**Q3. If you are out in a power-driven vessel in calm weather and the motor cuts out unexpectedly, you should first of all:**

- A. Fire flares.
- B. Radio Mayday.
- C. Drop the anchor and assess your options.
- D. Swim for shore.

**Q4. Fuel vapour will not leave a compartment without assistance due to:**

- A. Fuel vapours being the same weight as air.
- B. Fuel vapours being lighter than air.
- C. Fuel vapours being heavier than air.
- D. All of the above.

**Q5. After a period of being exposed to cold water the most likely effect on the body will be:**

- A. Hunger.
- B. Hypothermia.
- C. Dehydration.
- D. Thirst.

**Q6. Who is responsible for the safety of all on board a recreational vessel?**

- A The owner or their representative.
- B The most experienced person on board.
- C Any qualified person.
- D The skipper.

Answers to the self test questions can be found on page 101.

# Practical Assessment

## Proving your practical skills

To receive a Recreational Skipper's Ticket (RST) you must demonstrate both understanding (the theory assessment) and ability (the practical assessment) to a standard set by DoT.

This section explains the skills you have to demonstrate to an approved RST assessor in order to pass the practical assessment.

The assessment criteria (listed below each task title in blue) are the skills you need to demonstrate to your assessor to pass each task.

During the assessment the assessor will be watching you skipper your vessel. To pass, you have to meet the standard for the RST set by DoT.

At any stage of the assessment unsafe skippering that puts the vessel, its passengers or other water users in immediate danger is considered unacceptable and will result in immediate failure.

Two attempts are permitted on all tasks except for Task 1 which is assessed throughout the entire practical assessment. All criteria must be demonstrated in one of these attempts for you to pass. If you have not passed a task after two attempts, the assessment is stopped and you will have to start your practical assessment again.

The assessment will take about 45 minutes but could be longer if a number of people are being assessed or if you have elected to do some training rather than just the assessment.

During the assessment the assessor will give directions to dock, complete a man overboard, etc. At all times follow the collision regulations and safe boating practices.

If at any stage you don't understand the instruction from the assessor, let them know and they will run through it again. The assessor can repeat instructions but they can't tell you how to skipper once the assessment has started.

The assessor will be recording information as you go. If they write something down do not assume you have made a mistake because they record your overall performance.

Your assessor will provide feedback on how you went after each task. This is a good opportunity to pick up advice on where you can improve your skippering for the future. Being good at what you enjoy doing is part of the pleasure of doing it.

If English is your second language, you have a hearing problem or for any other reason you may have difficulties in understanding or performing the assessment tasks, it is important that you point this out to your assessor prior to the assessment so they can ensure there are no misunderstandings.

Additional crew are permitted (if required) for the safe operation and handling of your vessel during your assessment.





## Task 1 – The vessel is safely operated within the rules and regulations

**Criteria:** During the performance of all tasks, you must obey the relevant marine safety rules, regulations relating to:

1. Minimising the vessel's impact on others and the environment.
2. Applying marine safety rules and regulations.
3. Ensuring that the vessel and equipment are maintained to a good working condition.
4. Monitoring the safety of the vessel and people on board at all times.

This task is assessed throughout your entire assessment. All through the practical assessment, you must operate your vessel safely, and obey any local and general marine safety rules. Although the assessor may ask you to carry out certain manoeuvres, you are still the skipper of your boat and are responsible for your own and your passengers' safety. You should not undertake any manoeuvre that you believe to be unsafe. Unsafe skippering is unacceptable and will result in immediate failure at any stage during the assessment.

The criteria listed above are covered in the earlier sections of this workbook. You will be expected to use this knowledge while you are operating your boat during all assessments.

### To pass this task you will be required to demonstrate the following:

#### 1. Minimise the vessel's impact on others and the environment.

- You will be required to drive your vessel in a way that does not adversely affect other water users or cause a nuisance, and consider the affect that your vessel may have on other boats or people such as excess wash or noise.
- Keep a good distance from wildlife to minimise any disturbance and ensure your vessels wash is minimised to reduce the risk of causing damage to the shoreline.
- Arrange to store garbage, waste or oily bilge water on board until they can be discharged responsibly when back on land.

#### 2. Apply marine safety rules and regulations.

During the entire assessment and performance of all tasks it is the skipper's responsibility to ensure the vessel is navigated in accordance to the rules and regulations applicable to the area of operation. Some things to consider are:

- keep a lookout and determine whether action is needed under the collision rules;
- navigating in narrow channels, travel on the starboard side and pass oncoming boats on the port side;
- keep within any speed limit restrictions;
- ensure you have the required safety gear for the area of operation; and
- check the vessel is registered and displaying a current registration sticker.

#### 3. Ensure that the vessel and equipment are maintained to a good working condition.

- The assessor will require your boat and its equipment to be in good working condition. If the vessel breaks down or becomes unseaworthy during an assessment, the assessment will be stopped and you will have to complete the practical assessment later.
- Safety gear must be in a serviceable condition and stowed where it is easily accessible.

#### 4. Monitor the safety of the vessel and passengers at all times.

Throughout your assessment, you should give similar levels of attention to the skippering job that you would to the driving of a car. You are responsible for the safety of the vessel, crew and passengers by:

- ensuring that the depth of water is appropriate;
- ensuring the boat is safe to operate;
- assessing sea state and deciding on appropriate speeds and direction;
- ensuring the vessel is not taking water;
- directing passengers to sit in places that best aid their safety and the vessel's trim; and
- ensuring passengers do not endanger themselves by, for example, having hands on the gunwale when berthing.

# Task 1 – Vessel is Operated Safely

# Task 2 – Berthing Equipment

## Task 2 – Skipper checks the suitability and condition of the vessel's mooring/berthing equipment and secures the vessel

**Criteria:** The skipper checks the condition of the mooring lines and the soundness of the berthing equipment to ensure they are acceptable to use and then secures the vessel by:

1. Checking berthing/mooring lines are in good condition.
2. Checking berthing/mooring equipment is sound and secure.
3. Securing the vessel using the mooring lines and cleats.

The assessor will ask you to show that your vessel's mooring lines and berthing equipment are in good condition and secure your vessel. You should move around the boat pointing out the condition of the mooring lines and the soundness of the berthing equipment that you will be using to secure the vessel to ensure they are acceptable to use and then secure the vessel.

All cleats, bollards, etc must be sound. All lines, splices, metal shackles and associated hardware must be in good condition to meet the RST standard.

### To pass this task you will be required to demonstrate the following:

#### 1. Check berthing/mooring lines are in good condition

You will need to check your lines for damage or wear and point out any weaknesses identified. Ropes must be in good condition and appropriate for the vessel you are securing. Any ropes that are found to be not suitable must not be used to secure the vessel.

#### 2. Check berthing/mooring equipment is sound and secure

You must check the securing points that you intend to use to secure the vessel for any movement, cracking and wear that may significantly reduce their strength. Securing points that are found to be in a poor condition must not be used to secure the vessel. The vessel may be secured by tying the lines to boat rails and other fittings as long as they are sound and secure.

#### 3. Secure the vessel using the lines and cleats

You will be required to secure your boat, while in the water, alongside a jetty, a pen or a mooring using the cleats and ropes. You only need to secure the vessel so that no harm comes to it for the period the assessment is taking place. If this means a single bow line secured to the jetty on its own will suffice, then that is appropriate for the assessment.

Lines with eye splices are allowed if they are available on the vessel. If the vessel is secured prior to the assessment commencing, the vessel will need to be unsecured and re-secured by you for the assessment. If a bridle is used, both ends connected to the vessel must be unsecured during the assessment.

#### Securing your boat in a pen

If your boat is secured in a pen, the lines need to be attached so your vessel will not impact with the jetty. Depending on your boat design and pen layout you could have a combination of bow and stern lines as well as springs, these lines will also usually have counter weights that apply pressure on the boat holding it in position. Indicate to the assessor the condition of the lines, line splices, metal shackles and all associated hardware from the pen posts to the securing points on the boat.

All lines, splices, metal shackles and associated hardware must be in good condition.

#### Securing your boat on a mooring

If your boat is secured to a mooring you need to indicate to the assessor the condition of the lines, line splices, metal shackles and all associated hardware from the mooring to the securing points on the boat. All lines, splices, metal shackles and associated hardware must be in good condition.



*Check that lines are in a good condition.*

### Task 3 – Skipper conducts a safety briefing to all on board identifying the type and location of the vessel's mandatory safety equipment and verbally check that the information is understood

**Criteria:** Communicate your knowledge of your vessel's mandatory safety equipment and ensure that the information is understood by all persons on board by:

1. Identifying the different types of mandatory safety equipment.
2. Identifying the location of the mandatory safety equipment.
3. Verbally checking that the information relating to the mandatory safety equipment is understood by all passengers on board.

If you have ever been on a charter boat or ferry you will have received a briefing from the skipper at the start of the trip, this briefing would be a model for the briefing you will be required to give.

The assessor will ask you to conduct a safety briefing for the area that you will be operating in. You should move around the boat and point out all of the mandatory safety equipment required for the area of operation. Once you have delivered your safety briefing you will need to ensure that the information is understood.

**To pass this task you will be required to demonstrate the following:**

#### 1. Identify the different types of mandatory safety equipment

You need to show all the mandatory safety equipment required for the area you will be operating in.

If your boat does not carry the mandatory safety equipment for the area you propose to operate in for the RST practical assessment, the assessment will not continue. Check the Safety Equipment section in this workbook to know what must be on board and what condition it must be in before the assessment.

#### 2. Identify the location of the mandatory safety equipment

You need to point out the location all the mandatory safety equipment required for the area you will be operating in. Safety equipment should be located in an accessible place at all times.

*Note: Criteria 1 and 2 will usually be carried out simultaneously.*

#### 3. Verbally check that the information is understood by all passengers on board

You need to confirm with all people on board that the safety briefing was understood. You will need to ask the passengers and crew if they understand or have any further questions. This will indicate if your briefing was adequate.



Show all the safety equipment required for the area you will be operating in.



# Task 4 – Pre-start Checks

## Task 4 – Skipper prepares and starts motor safely

**Criteria:** Demonstrate the pre-checks and safe starting of an engine by:

### Fuel System

1. Checking for fuel fumes (inboards only)
2. Checking fuel lines are connected, fuel cocks opened (if applicable).
3. Checking the amount of fuel.

### Cooling System

4. Checking coolant levels are sufficient (if applicable).
5. Checking engine cooling intakes are open/clear.

### Electrical System

6. Checking safety lanyard is securely connected (if applicable).

### Starting Engine

7. Ensuring motor is in neutral
8. Immediately prior to starting, ensuring that it is safe to start.
9. Starting the motor.

During this task, you must demonstrate that you know how to run through the pre-start checks and safely start the engine. The assessor will ask you to conduct your pre-start checks and start your motor. You should conduct the pre-checks relative to your boat and start your motor.

Not all the criteria listed above will relate to your vessel, and you will only need to demonstrate what applies to your boat. Your assessor will be familiar with your vessel and will know which criteria apply.

*Note: Criteria 1 to 8 of this task must be completed prior to starting the motor.*



*Conduct a pre-start check before starting.*



**To pass this task you will be required to demonstrate the following:****1. Check for fuel fumes (inboards only)**

Ensure engine compartments and other confined areas such as bilges are free of fumes or fuel vapour. If you smell fuel or if the boat is fitted with a fume detector that indicates danger, find the problem, make sure it is fixed and ventilate adequately prior to starting the engine.

**2. Check fuel lines are connected and if fitted, fuel cocks open**

Ensure fuel lines are connected from the fuel tank to the engine. If fuel cocks are fitted, you will need to ensure that they are turned to the open position to enable the fuel to flow to the engine.

**3. Check the amount of fuel**

Fuel tanks will be either portable or built into the structure of the boat. Check to ensure that there is enough fuel in the tank to start the motor. Portable fuel tanks will normally have a fuel level indicator on them, while the level of fuel for an inbuilt tank may be indicated on a fuel gauge located near the helm.

**4. Check coolant levels are sufficient (if applicable)**

Fresh water cooling systems will have a coolant header tank which holds a reserve of coolant. This is normally mounted on the front of the engine and is usually fitted with a filler cap and a level indicator. You will need to have a look at the indicator to ensure the coolant level is within operational limits. Do not attempt to open the filler cap when the engine has been running as in a pressurised system hot water may spray out and cause serious injury.

**5. Check engine cooling intakes are open/clear**

On an outboard motor, the intakes will be located on the leg of the motor below the waterline. Plastic bags or seaweed are some objects that may stop the water from being drawn up and affect the engine's cooling system. You will need to lift the motor leg or look over the back of the boat to ensure that the intakes are clear.

Inboard motors will have a raw water intake, a freshwater system or both. Raw water systems suck water from a sea strainer and deliver the water through the engine coolers before discharging either directly overboard or through the exhaust system. If the boat has this type of system, you will need to check that raw water intake sea cocks are open.

**6. Check safety lanyard is securely connected (if applicable)**

If the vessel is fitted with a safety lanyard, you will need to physically check that it is properly inserted and securely connected. If the lanyard is not fitted correctly it will stop the motor from starting. Although advisable, for the purpose of the assessment, you will not be required to connect the lanyard to yourself.

**7. Ensure motor is in neutral**

The gears must be checked to ensure that the motor is in neutral prior to starting. Most engines won't start if they are in gear, but if they do, it may cause the vessel to move suddenly, possibly causing an injury.

**8. Immediately prior to starting, ensure that it is safe to start**

Inspect the area near the propellor and engine machinery to ensure the area is clear before starting the engine. Propellers pose a risk that is easily ignored because they are under the water; out of sight and out of mind. Only attempt to start the engine if it is safe to do so.

**9. Start the motor**

Once criteria one to eight have been satisfied you are now ready to start the motor. This will require turning a key or pulling a starter cord depending on the motor that you are starting. You must successfully start the motor to pass.

# Task 5 – Voyage Plan

## Task 5 – Skipper advises a responsible person of the voyage plan

Criteria: Communicate by radio or other means, a voyage and vessel details to a responsible person by notifying them of:

1. Vessel name, registration number or call sign.
2. Departure time.
3. Departure location.
4. Destination.
5. Trip intentions.
6. Number of people on board.
7. Amount of fuel carried in litres.
8. Estimated time of return.

Boats carry several means of indicating distress or otherwise asking for help, but good boating sense says having someone ashore who knows about your trip plan gives an extra level of safety. If something goes badly wrong, and you are unable to use your distress equipment, a search will still get underway.

Giving trip details to a responsible person puts responsibilities on two people, the person to actually do something if you do not contact them by the nominated time, and you. You must make that contact when you return, and you must stick with the trip plan unless you are able to make contact during the day and advise of any change.

The most common responsible person that skippers log on with is the duty officer at the local marine rescue group. Some people choose to notify a neighbour or relative. If you do, you must accept that this person may not have much marine understanding. It would be best to write the plan down, and go through it with them. At the end of the plan, make sure you write that they must ring the police if you don't make contact at the agreed time. A fridge magnet is available from DoT for you to fill out your trip details on and give to a responsible person.

The authorised assessor will ask you to log on for a voyage. You will be required to demonstrate that you know how to log on. This can be done by writing the information down, simulating a radio call or by other means. Regardless of your choice of how you choose to log on, you must include each of the eight points listed to successfully meet the RST standard.



*Inform a responsible person of your trip plan.*

**To pass this task you will be required to demonstrate the following:****1. Communicate the vessel name, registration number or call sign**

You will need to identify the vessel by its name, registration number or call sign. It does not need to be, the actual vessel being used; you can make one up, for the purpose of the assessment. The vessel's identity provides valuable information recorded on DoT's registration system that can assist in a search.

**2. Departure time**

Give the departure time as a time, in hours and minutes ie 07:15. Providing information like, "departing in 15 minutes" or "shortly", will not be recorded as a pass.

**3. Departure location**

A departure location should be a recognisable landmark such as a mooring area, launch ramp or marina. In the event that your vessel is reported overdue, the departure location may provide important information and confirm you are overdue as the vessel's trailer will still be in the car park.

**4. Destination**

Knowing where you intended to go will greatly assist if you are reported overdue. If you are going to a number of locations, it does not hurt to mention them all; the more information the better.

**5. Trip intentions**

This describes the activity that you will be undertaking such as fishing, diving or cruising the bays. Should you require any assistance, knowing the activities that you plan to undertake can assist in a search.

**6. Number of persons on board**

This can be broken down into adults and children or given as a total number of people onboard.

**7. Amount of fuel carried in litres**

The volume of fuel reported can be used by rescuers to determine if the vessel could have run out of fuel, or what the maximum distance from the point of departure might be.

The volume of fuel should be provided in reasonably accurate terms. The words "plenty" or "enough" would not assist in the case of a search and rescue operation. The RST assessment requires the quantity of fuel carried to be quoted in reasonably accurate terms using litres.

**8. Estimated time of return**

Give the time of return as a time in hours and minutes ie 14:30 or 02:30 PM. Providing information like, "returning in a couple of hours" or "shortly", will not be recorded as a pass.

*Note: You are not required to give a return destination only the time is required.*

**An example of demonstrating your knowledge by simulating a radio call is:**

*"Marine rescue, this is AB1500 over"*

When Marine Rescue acknowledges your call say:

*"Marine rescue, this is AB1500 departing Fremantle Boat Harbour at 07:50 to go fishing at Carnac Island, three people on board, 120 litres of fuel, estimated time of return is 14:30, over"*

When Marine Rescue acknowledges say:

*"Thank you marine rescue, out"*

*Note: You will be assessed on the information that you have given to meet the criteria and not your simulated radio procedure.*

# Task 6 – Departing a Berth

## Task 6 – The skipper safely departs a berth

**Criteria:** Safely depart a berth by demonstrating:

1. Checking that it is safe to perform the manoeuvre.
2. Allowing for the effects of wind/current.
3. Departing with little or no impact.
4. Not impeding other vessels.
5. Using appropriate engine revs.
6. Demonstrating smooth and timely use of gears.
7. Mooring lines are stowed/replaced/secured.

During this task, you must demonstrate that you understand how to depart a berth safely; this could be from a jetty, pontoon, boat or pen.

The assessor will ask you to depart the berth. You should depart the berth without interfering with other vessels or people, with little or no impact to the berth, using appropriate revs and smooth use of gears to successfully meet the RST standard. Once departed you must ensure that mooring lines are secured or stowed.

**To pass this task you will be required to demonstrate the following:**

### 1. Check that it is safe to perform the manoeuvre

Before departing the berth, have a good look around to ensure it will not interfere with other water users – look around. Inspect the area around the boat to ensure the area is all clear before departing. You should only attempt to depart the berth if it is safe to do so.

### 2. Allow for the effects of wind/current

Wind and currents can have a dramatic effect on the handling of a vessel. During the assessment, depending on conditions, you will need to allow for their effects. Additional power and the method you choose to depart are some things that you will need to consider to counteract their impact on the vessel.

### 3. Depart with little or no impact

You must show that you have control of the boat by having little or no impact with the berth while departing. Allowing for the swing of the stern and keeping the revs down will minimise any impact on the berth.

### 4. Not impeding other vessels

Extra traffic and a limit of space often cause a bottle neck of vessels around a berth. You must anticipate all traffic movement and ensure your vessel does not impede other vessels on or around the berth.

### 5. Use appropriate engine revs

You will need to use appropriate engine revs for the prevailing conditions to demonstrate that you are a competent skipper and that you have control of the boat. Match your engine revs to the manoeuvre you are doing. You should not have to make excessive changes to the engine revs in order to complete your manoeuvre. This task should be undertaken using low engine revs with the vessel travelling at a minimum speed.

### 6. Demonstrate smooth and timely use of gears

Gear changes and the timing of the selection should be smooth and made in ample time to allow for a smooth departure.

### 7. Mooring lines are stowed/replaced/secured

The mooring lines must be stowed inside the boat or tied off so they can't trail in the water and foul the propeller. This can be done the skipper or by another person under the direction of the skipper.

The following are examples of the manoeuvring procedures for departing a berth on three different types of vessel.



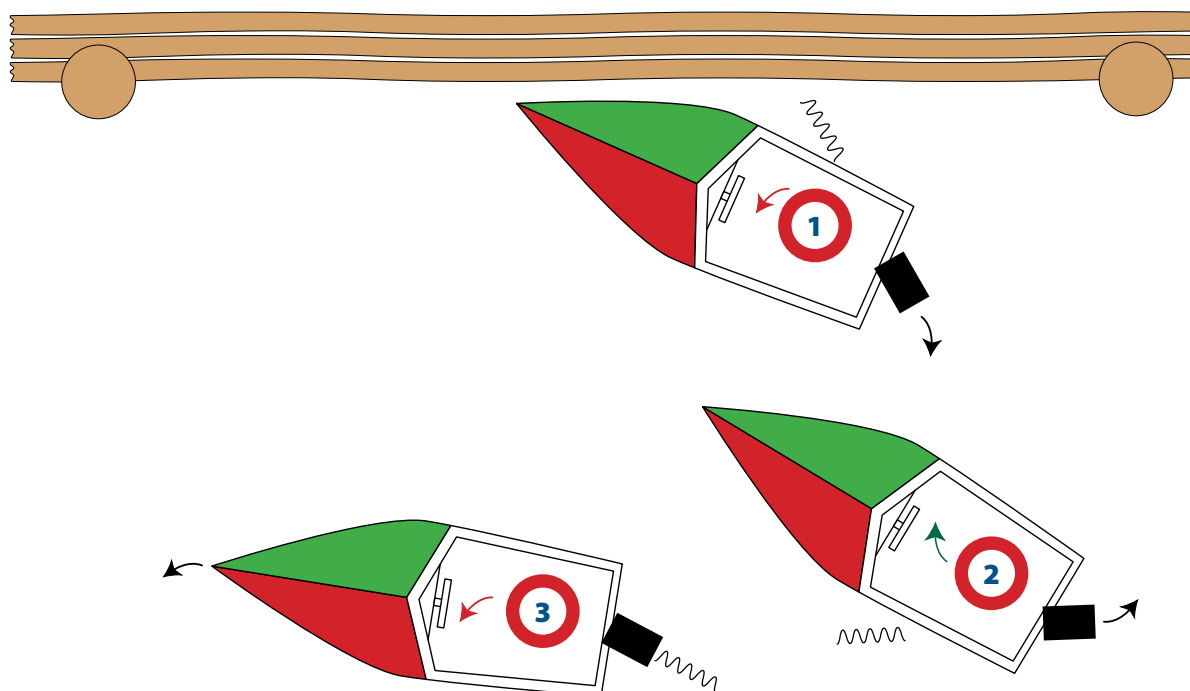
## Task 6 – Departing a Berth

**Outboard leg (outboard or sterndrive motor)**

**Step 1:** With the motor in neutral, turn the wheel fully away from the berth, this points the propeller in the direction the stern will go in reverse. Put the motor in reverse and apply very little throttle. Unless wind or current is pushing the vessel onto the berth, the stern will move out and the bow will not scrape on the berth. If the boat is being pushed on, you may need to straighten the wheel a little as the vessel moves astern, this will protect the bow from hitting the berth.

**Step 2:** Once the bow of the vessel is clear of the jetty and while still in reverse, turn the wheel fully toward the berth, this will straighten the vessel by swinging the stern towards the berth and the bow away from the berth.

**Step 3:** When the vessel is parallel to the berth turn the wheel in the direction you wish to go and engage forward propulsion.



# Task 6 – Departing a Berth

## Single shaft

The single shaft's rudder needs a flow of water over it before it will turn the boat. Therefore releasing the lines and going astern will usually not be very successful, particularly if wind or current is pushing the vessel onto the berth. The commonest way of getting off uses a spring.

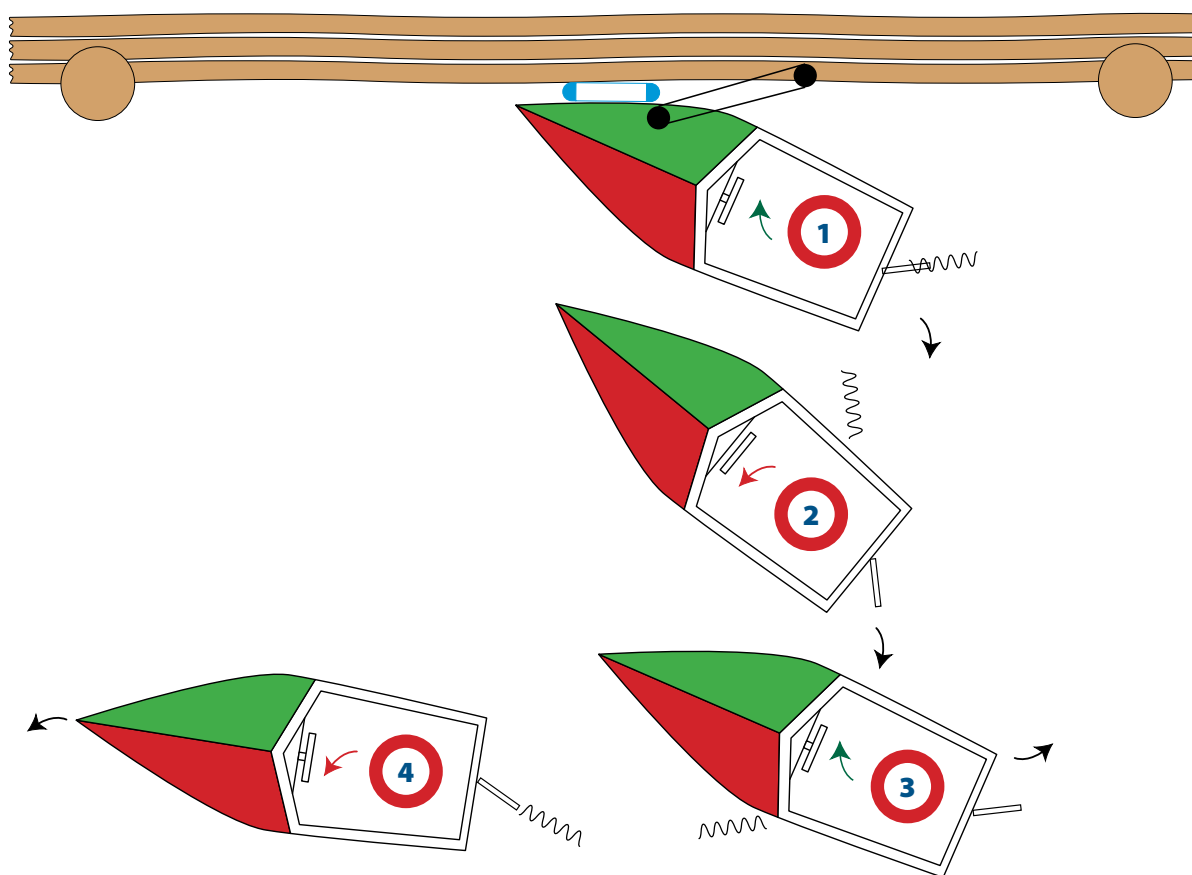
**Step 1:** Remove all berthing lines except a spring leading aft from well forward. Consider putting a fender between the berth and the shoulder of the bow. Turn the wheel fully towards the berth.

Put the motor into forward gear and apply a small amount of throttle. The vessel will try to move forward but the spring stops it. There is now a good flow of water past the rudder, so the stern will swing away from the berth. The vessel also tends to pivot around the bow's shoulder.

**Step 2:** When the stern is pointing well away from the berth, put the motor in neutral, release the spring, turn the wheel away from the berth, and reverse out.

**Step 3:** Once the bow of the vessel is clear of the jetty and while still in reverse, turn the wheel fully toward the berth, this will straighten the vessel by swinging the stern towards the berth and the bow away from the berth.

**Step 4:** When the vessel is parallel to the berth turn the wheel in the direction you wish to go and engage forward propulsion.



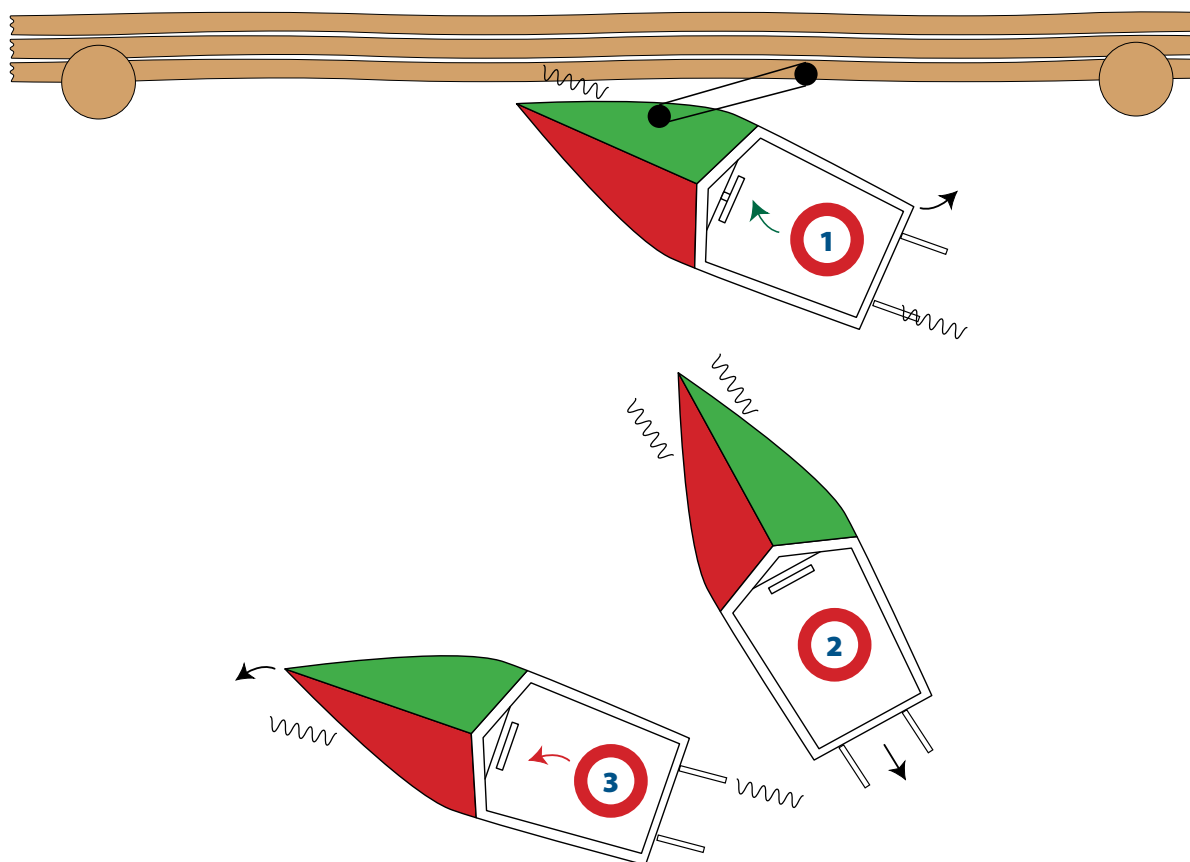
### Twin shaft

A similar manoeuvre can be made with twin shafts. Most close quarter manoeuvring with twin propellor vessels is probably best done entirely with the engines.

**Step 1:** When swinging the stern out, go forwards on the engine further from the berth and astern on the engine closest to the berth.

**Step 2:** Once the stern has swung out far enough to clear any obstacles, release the spring and go astern on both engines.

**Step 3:** Once the bow of the vessel is clear of the jetty, go forwards on the engine closest to the berth. When the vessel is pointing in the direction you wish to go, go forwards on both engines.



## Task 6 – Departing a Berth

# Task 7 – Man Overboard

## Task 7 – Safely retrieve a simulated man overboard (MOB)

**Criteria:** Demonstrate your competent manoeuvring of the vessel to retrieve a simulated MOB by:

1. Turning the vessel towards the simulated MOB.
2. Simulating the throwing of a flotation aid.
3. Ensuring a visual watch is maintained on the simulated MOB.
4. Completing turn so as to retrieve person from down wind/current.
5. Approaching at an appropriate speed.
6. Positioning the vessel down wind/current of simulated MOB.
7. Turning the engine off before retrieving simulated MOB.
8. Ensuring the MOB is retrieved.

For this task you will be picking up a standard RST MOB float. However, you must show as much care, throughout the exercise, as if it were a real person. The overriding consideration is to not endanger the person in the water; far more important than speed of recovery.

During this task, you must demonstrate that you understand how to manoeuvre your boat competently and safely to retrieve a simulated MOB float.

The assessor will drop a simulated MOB (large white RST float) overboard and shout, "man overboard". You will be required to demonstrate the eight criteria listed above.

*Note: In relation to the assessment of Task 1 - As the MOB is a simulated person you should not drive a boat over 8 knots within 45 metres of a person in the water.*



*Turn the engine off before retrieving MOB*



**To pass this task you will be required to demonstrate the following:****1. Turn the vessel towards the MOB**

On hearing "man overboard", you should immediately turn the boat hard towards the side that the MOB fell, this swings the stern away from the MOB and puts a greater distance between them and the propeller.

**2. Simulate throwing of a flotation aid**

This skipper must simulate the throwing of a buoyant aid such as a life jacket for the MOB to cling to himself or assign a crew member to do it. This is especially important in a larger boat or rough water that may take some time to get back to the person.

**3. Ensure a visual watch is maintained on the MOB**

Ensure that someone keeps visual contact with the MOB. The skipper can allocate this task to a crew member or the assessor.

**4. Complete turn so as to retrieve MOB from down wind/current**

Make a turn well clear of the MOB and manoeuvre to a position to approach from down wind or into the current, whichever is strongest.

**5. Approach at an appropriate speed**

Drop speed to the minimum needed to maintain steerage.

**6. Position the vessel down wind/current of MOB**

You must judge the point where and when you put the motor in neutral, the boat will drift ahead and stop alongside the MOB. There must be no use of the engine within one boat length of the MOB.

**7. Turns the engine off before retrieving MOB**

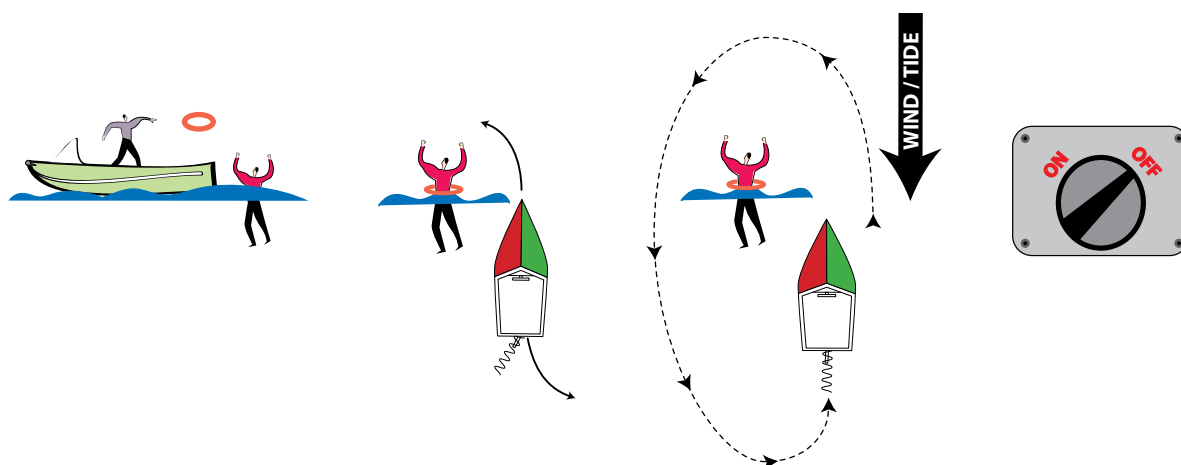
Propeller strike is a real potential danger when navigating close to a person in the water. The engine must be stopped prior to retrieving the MOB.

**8. Ensure the MOB is retrieved**

Once the engine is turned off, it is safe to retrieve the MOB. The MOB may be retrieved by the skipper or by a crew member under the direction of the skipper. Usually for a person to be retrieved from the water and to get back into a boat they will climb in over the stern, either using a ladder or in some cases the engine leg to stand on.

The MOB can be retrieved from the bow, side or stern to pass the assessment,

If the skipper or crew fail to retrieve the MOB after the skipper has instructed them to do so, the criteria has not been met and a second attempt must take place.



# Task 7 – Man Overboard

## Task 8 – Determine position by using navigational marks, transits and other landmarks

**Criteria:** Demonstrate your ability to record and communicate the vessel's position using landmarks and navigational aids by:

1. Notifying the assessor of the two objects that align to form the transit used to fix the vessel's position.
2. Using the transit to steer a steady course for 30 seconds.

When close to the coast, mariners are more interested in estimating or establishing their position with reference to natural landmarks and navigation marks than they are in using navigational electronics. Actually seeing a reef gives you a much better feel for your vessel's safety than viewing the same thing on a screen!

One of the best ways of using landmarks to fix your position is by using transits. Even without a chart they give a position you can send to another boat or to a marine rescue organisation. If you have a chart, you can quickly plot your position on it.

Your assessor will ask you to identify the objects that you will be using as a transit and steer a steady course along it. You might be able to align a couple of channel markers or perhaps a conspicuous house roof and a large tree. Once you have identified the transit, notify the assessor of the objects that you intend to use, and make your way along it for 30 seconds to successfully to meet the RST standard.

**To pass this task you will be required to demonstrate the following:**

1. **Notify the assessor of the objects that align to form the transit used to fix the vessel's position**
2. **Use the transit to steer a steady course for 30 seconds**

The principle of transits is looking for natural objects, navigation marks, conspicuous buildings and the like that line up or nearly line up to your current location. If you have two different pairs of objects more or less in line, where the two lines cross is your position. You will need to point out the two objects that you have chosen to form a transit.

You have probably often used a specialised kind of transit – leading marks, where you are able to steer an accurate course by keeping a pair of lights or shapes one above the other. In the assessment, you will need to steer a steady course along the transit that you have identified. If you find you are going off course, steer towards the bottom (lower) mark and they will line up again.



*Notify the assessor of the objects you will be using to form the transit.*

## Task 9 – Perform a controlled stop at approximately 5 knots

**Criteria:** At a speed of approximately 5 knots, demonstrate your ability to safely stop the vessel within two boat lengths by:

1. Checking that it is safe to perform the controlled stop.
2. Shouting a relevant warning to the crew.
3. Reducing engine revs.
4. Engaging neutral gear.
5. Engaging reverse gear.
6. Using appropriate revs to stop the vessel.
7. Stopping the forward motion of the vessel within two boat lengths.

The most likely time to need to make a controlled stop is when travelling at low speed in a congested area, when an alteration of course would be impractical. An example might be encountering a swimmer when passing through a mooring area. This skill requires you to show that you can safely stop your boat at a speed of 5 knots, using reverse gear, within two boat lengths.

The assessor will ask you to bring your boat to approximately 5 knots travelling in a straight line and then tell you to stop.

*Note: If your vessel does not have astern propulsion you are not required to perform this task.*

### To pass this task you will be required to demonstrate the following:

#### 1. Check that it is safe to perform the task

Look behind you to make sure that during the demonstration of the manoeuvre you will not be hit from the side or astern by another boat.

#### 2. Shout a relevant warning to the crew

Stopping your vessel suddenly may put passengers at risk. You will need to warn them that you are about to stop suddenly by telling them to hold on. Boats are often noisy so you may have to yell this out in order to make sure they have heard you.

#### 3. Reduce engine revs

Moving the gear/throttle lever straight from ahead to astern can badly damage your gear box, so firstly go back to neutral to allow the engine revs to drop before you engage reverse.

#### 4. Engage neutral gear

Engaging neutral for a short period allows the engine revs to drop to idle, this eliminates the chance of damaging the gear box when you select reverse.

#### 5. Engage reverse gear

Almost all outboard motor controls have a button that has to be squeezed before the lever can be moved out of neutral. With lever controls, make a movement into reverse. If you have the button, squeeze it and make a positive movement into reverse; doing it slowly will cause excessive wear to the gear box's dog clutch.

#### 6. Use appropriate revs to stop the vessel

With either single or twin levers, make a controlled increase in revs to stop the boat. With outboards or sterndrives, especially, be careful not to put on too much throttle. Putting on too many revs astern can simply make your propeller lose all grip; or, put another way, will do little towards stopping your boat. Practise will soon tell you the right amount.

#### 7. Stop the forward motion of the vessel within two boat lengths

Although the steps may seem agonisingly slow, they are simply designed to suit the way motors and gear boxes work. In fact, this totals to a quick sequence, easily allowing a stop within two boat lengths.



*Engage neutral gear before you engage reverse gear.*



### **Task 10 – Vessel is safely navigated and secured alongside a berth**

Criteria: Demonstrate your competent manoeuvring and securing of the vessel by:

1. Checking that it is safe to perform the manoeuvre.
2. Not impeding other vessels.
3. Selecting the appropriate side of the vessel to come alongside as a result of wind/current observations.
4. Approaching the berth at an appropriate speed.
5. Approaching the berth at an appropriate angle.
6. Demonstrating smooth and timely use of gears.
7. Using appropriate engine revs.
8. Arriving at the berth with little or no impact to vessel and structure.
9. Securing the vessel appropriately with mooring lines.

All these manoeuvres require practise and need you to have a feel for how your boat behaves. A good way to practise and develop the feel is by putting your boat alongside an anchored foam float, or by imagining the jetty is actually two to three metres wider than it actually is. Mistakes here cause no damage. Remember that even the most experienced of people, the Rottneft ferry skippers for example, will tell you that the slower you do it the more time you have to correct errors.

During this task you must demonstrate competent manoeuvring of your boat to put it alongside a berth and once there you must secure it to successfully meet the RST standard. The assessor will ask you to safely navigate and secure the vessel alongside a berth.



*Use an appropriate speed to bring the vessel alongside.*



**To pass this task you will be required to demonstrate the following:****1. Check that it is safe to perform the manoeuvre**

Before approaching the berth, have a good look around to ensure you will not interfere with other water users. Inspect the area around the boat to ensure the area is all clear before berthing and only attempt to berth boat once it is safe to do so.

**2. Do not impede other vessels**

Extra traffic and a limit of space often cause a bottle neck of vessels around a berth. You must anticipate all traffic movement and ensure your vessel does not impede other vessels on or around the berth.

**3. Select the appropriate side of the vessel to come alongside as a result of wind/current observations**

Assess the wind and current, you are interested in the combined result of both. The easiest way to determine this is to look at nearby moored boats, they will swing until their bows point into the combined wind/current. It is usually easier to berth with your bow pointing in that same direction. If there is negligible wind or current, or it does not more or less run along the length of the berth, you can choose which side to put alongside to suit your steering-propulsion system. Wind and currents can have a dramatic effect on the handling of a vessel.

**4. Approach the berth at an appropriate speed**

When berthing your vessel you should drive at the slowest possible speed you can while still maintaining steerage. Too slow and the wind/current will take over and you will not be able to hold your line or start your swing to come alongside, too fast and you risk hitting the jetty and damaging your boat.

**5. Approach the berth at an appropriate angle**

The angle you approach a berth depends on a number of factors. In an ideal situation with the wind/current running parallel to the berth an angle of 45 degrees is usually the most appropriate and you commence your swing to put your boat alongside about two boat lengths away.

**6. Demonstrate smooth and timely use of gears**

Just prior to coming alongside you should place your vessel in neutral and be ready to place it in reverse to slow/stop the vessel as it comes alongside, the vessel should stop alongside the point of the berth you were aiming at. During docking, you may be required to move in and out of gear a number of times. Ensure these movements are smooth and made in ample time to allow for a smooth approach.

**7. Use appropriate engine revs**

Set your speed early, it should be the slowest at which your vessel will still steer without being exceptionally sluggish in response to the wheel. You will need to use appropriate engine revs for the prevailing conditions and that you have control of the boat. Match your engine revs to the manoeuvre you are doing.

You should not have to make excessive changes to the engine revs in order to complete your manoeuvre. This task should be undertaken using low engine revs with the vessel travelling at a minimum speed.

**8. Arrive at the berth with little or no impact to vessel and structure**

You must show that you have control of the boat by having little or no impact with the berth while berthing. Allowing for the swing of the stern and keeping, the revs down will minimise any impact on the berth.

**9. Secure the vessel appropriately with mooring lines**

Securing the boat to the berth will confirm your ability to position the vessel close enough to the berth to be secured. The vessel only has to be secured well enough to allow change over of skippers, etc. You only have to use an amidships line or by having a spring line with the motor in gear may suffice.

# Task 10 – Secure Alongside

## Outboard leg

If it is powered by outboard or stern drive your boat will turn in either direction, going ahead or astern, equally well. The sketch shows a vessel coming alongside with the starboard side to the jetty. This system uses the principle that the stern does nearly all the turning (while the bow barely moves), and it moves in the direction the propeller is pointing.

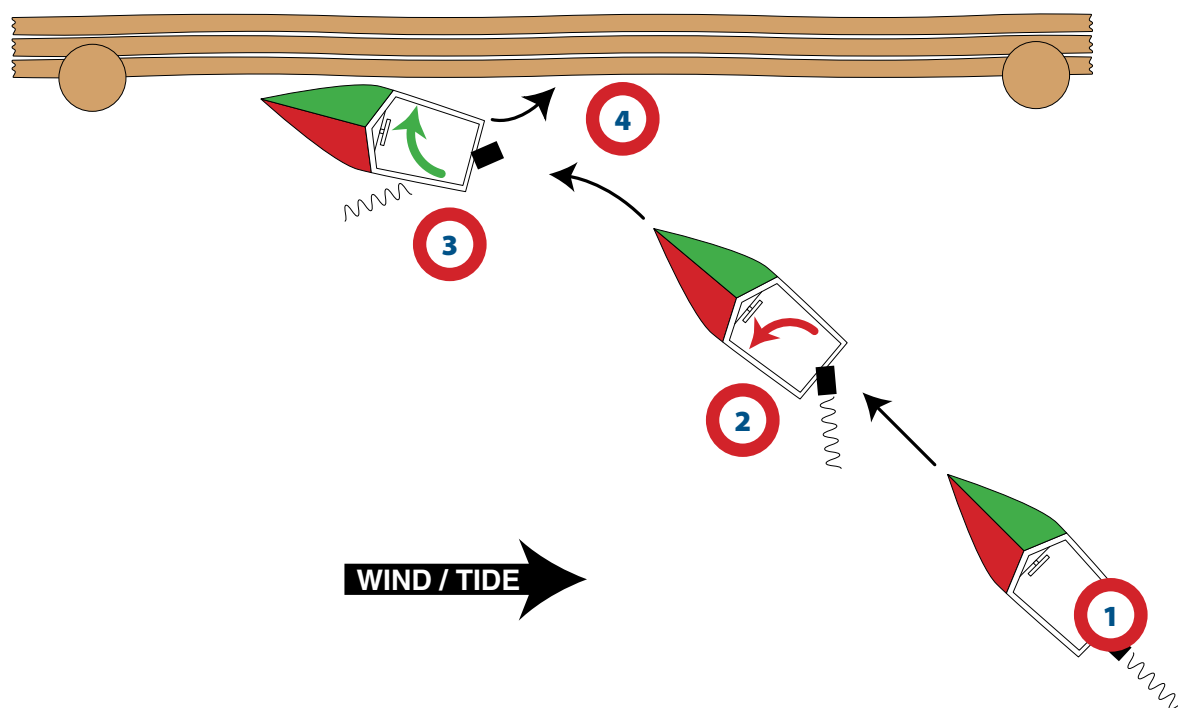
**Step 1:** Set a slow speed, aim for a spot at the berth where you intend ending up and hold the course. You should be travelling at an angle to the berth of somewhere between 30 and 45 degrees.

**Step 2:** When you are two to three boat lengths from the berth, turn the wheel to port (away from the berth) to start the stern swinging towards the berth. The steeper your angle of approach, the more you turn the wheel. This action will do most of the work towards putting you alongside; your actions at Step 3 and 4 will just finish it off.

**Step 3:** With the bow's shoulder getting close to the berth, put the motor in neutral and turn the wheel to starboard (towards the berth). This may feel unnatural, but it will not cause the bow to swing towards the berth because outboards have very little turning effect in neutral.

**Step 4:** Immediately after you have turned the wheel, put the motor in reverse. This will achieve two things; it will stop the boat moving ahead and because the propeller is now pointing towards the berth, it will pull the stern in to the berth. Once this is achieved, put the motor in neutral.

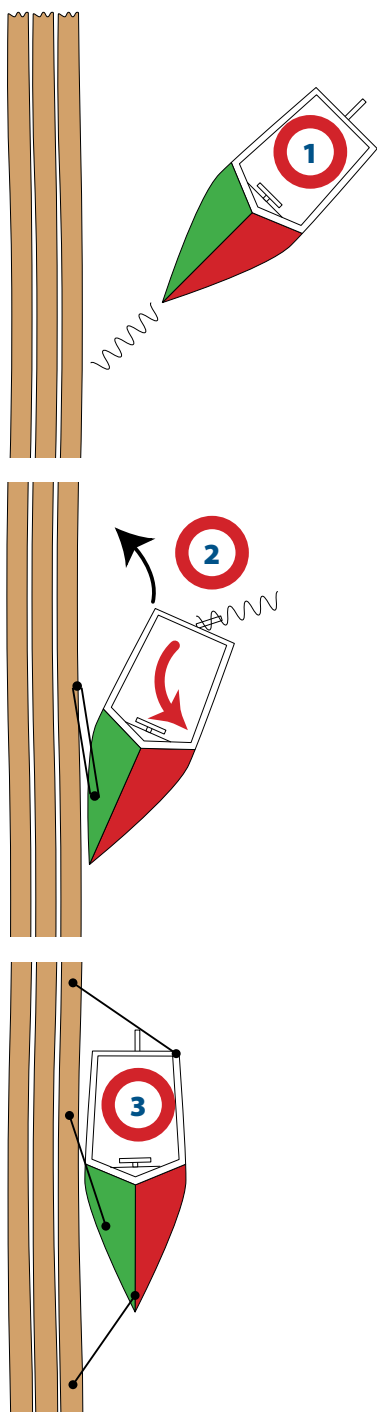
You will be tempted to combine the actions at Step 3 and 4 – to turn the wheel at the same time as you are putting the lever to neutral. This temptation will be stronger if you are travelling faster than minimum steerage speed, or you leave the action at Step 3 a bit late.



### Single shaft

Almost all single-engine vessels have a right-handed propeller. For these boats the port side is easier to put alongside because the stern tends to kick to port when the engine is going astern. The opposite applies to left-handed propellers. This description assumes a right-handed propeller.

If wind or current are affecting you adversely, if you have to put a single shaft boat's non-favoured side alongside, or if the boat's manoeuvrability is not good, you can use a spring to help bring the vessel alongside (as below).



**Step 1:** Make a shallow angle approach and use reverse to stop the vessel with the bow's shoulder almost touching the berth.

**Step 2:** Attach a spring from the vessel's forward end to the berth.

**Step 3:** Turn the wheel away from the berth and select forward gear and idle speed. The vessel will come alongside. Once the stern is alongside, the vessels can be secured with the appropriate mooring lines.

## Task 10 – Secure Alongside

# Task 10 – Secure Alongside

## Twin shaft

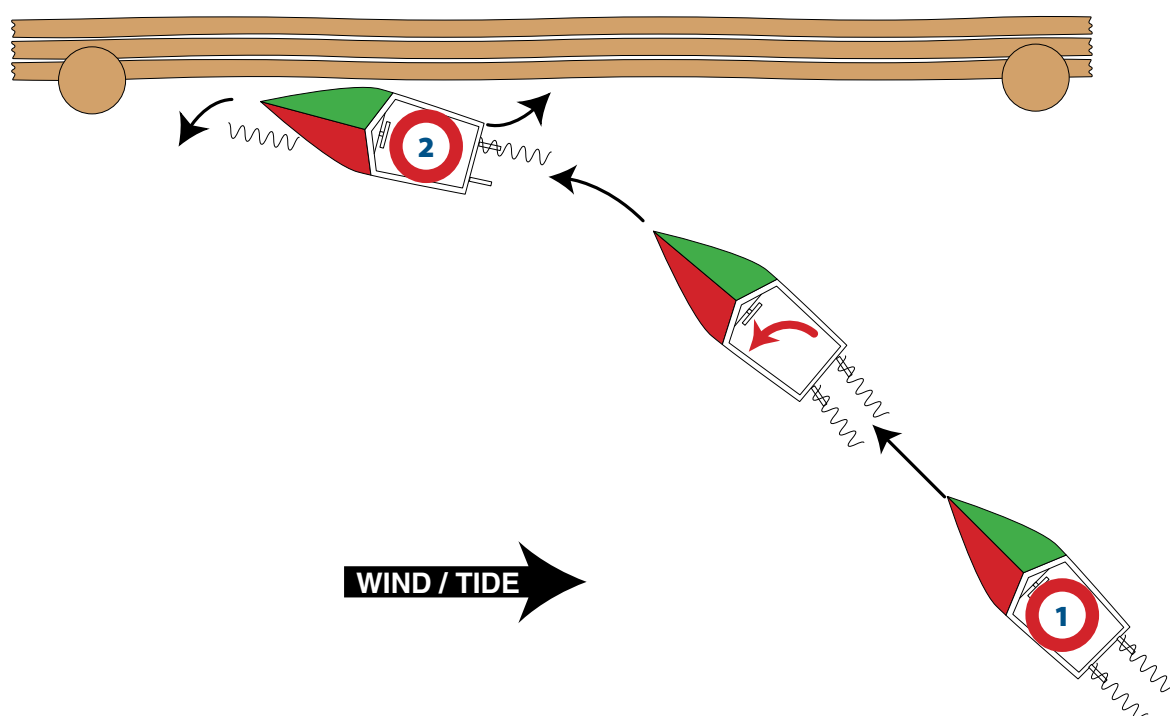
Invariably, a vessel with twin shafts (a twin propeller vessel) has the propellers outward turning. This means that, moving ahead or astern, it is set up to give you the best engine assistance with turning.

Twin screw vessels give you great manoeuvrability, and the only limitation they have is that, just like single screw, the bow stays more or less motionless while the stern does all the turning.

A great advantage with twin shaft vessels is that they have a short turning circle and no preference for putting one side or the other alongside.

**Step 1:** Make a slow approach, similar initially to a single shaft vessel.

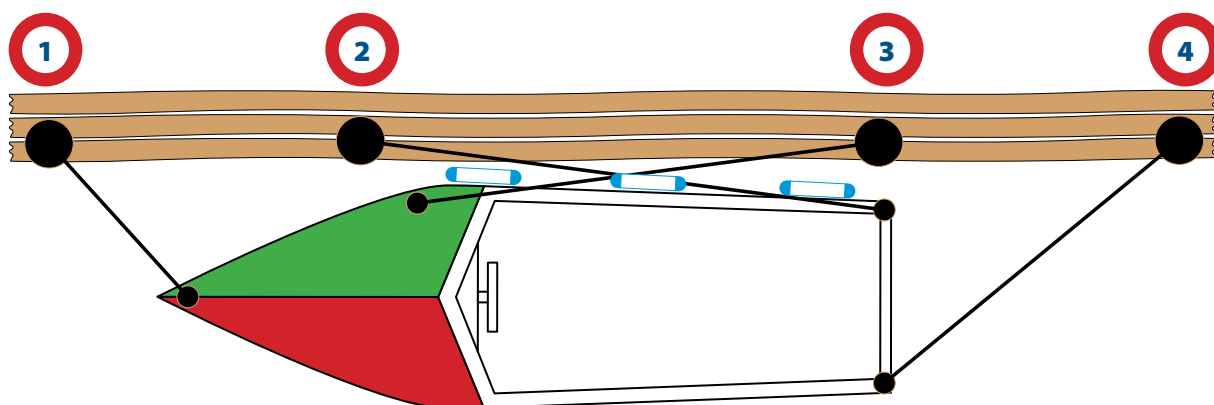
**Step 2:** With the engine closest to the berth ahead and the outer engine astern, use the short turning ability to pull the starboard stern alongside.



## Securing the vessel with berthing lines

Depending on the size of the vessel you will need a number of specific lines to adequately secure your vessel. Smaller vessels may need only a bow and stern line.

**Mooring lines:** 1. Bow line 2. Stern (aft) spring 3. Bow (forward) spring 4. Stern line





## Task 11 – Skipper advises a responsible person of safe return

Criteria: Communicate by radio or other means the vessel's safe return by notifying of:

1. The vessel's name, registration number or call sign.
2. Advising the responsible person of the vessel's safe return.

It is crucial that when you return from your trip you notify the responsible person you left your trip plan with. This can be done in the assessment by writing the information down, simulating a radio call or by other means. Regardless of your choice of how you choose to log off, you must include the two points listed above.

To demonstrate the skipper knows how to and can log off, the assessor will ask you to log off for your voyage.

If you choose to demonstrate your knowledge by simulating a radio call, your radio routine will be similar to this:

*"Marine rescue, this is AB1500 over"*

When Marine Rescue acknowledges your call say:

*"Marine rescue, this is AB1500 we have safely returned from our voyage and are signing off, over"*

When Marine Rescue acknowledges say:

*"Thank you marine rescue, out"*

**To pass this task you will be required to demonstrate the following:**

- |   |   |
|---|---|
| <b>1. Provide the vessel's name, registration number or call sign</b> | <b>2. Advise the responsible person of the vessel's safe return</b> |
|---|---|

You will need to identify the vessel by a name, registration number or call sign. It does not need to be the actual vessel being used; you can make one up for the purpose of the assessment.

Confirm that you have returned safely.



*Inform the responsible person of your return.*

# Practical Assessment Tasks

## Task 1 – The vessel is safely operated within the rules and regulations

**Criteria:** During the performance of all tasks, you must obey the relevant marine safety rules, regulations relating to:

1. Minimising the vessel's impact on others and the environment.
2. Applying marine safety rules and regulations.
3. Ensuring that the vessel and equipment are maintained to a good working condition.
4. Monitoring the safety of the vessel and people on board at all times.

## Task 2 – Skipper checks the suitability and condition of the vessel's mooring/berthing equipment and secures the vessel

**Criteria:** The skipper checks the condition of the mooring lines and the soundness of the berthing equipment to ensure they are acceptable to use and then secures the vessel by:

1. Checking berthing/mooring lines are in good condition.
2. Checking berthing/mooring equipment is sound and secure.
3. Securing the vessel using the mooring lines and cleats.

## Task 3 – Skipper conducts a safety briefing to all on board identifying the type and location of the vessel's mandatory safety equipment and verbally check that the information is understood

**Criteria:** Communicate your knowledge of your vessel's safety equipment and ensure that the information is understood by all persons on board by:

1. Identifying the different types of mandatory safety equipment.
2. Identifying the location of the mandatory safety equipment.
3. Verbally checking that the information is understood by all passengers on board.

## Task 4 – Skipper prepares and starts motor safely

**Criteria:** Demonstrate the pre-checks and safe starting of an engine by:

### Fuel System

1. Checking for fuel fumes (inboards only).
2. Checking fuel lines are connected, fuel cocks opened (if applicable).
3. Checking the amount of fuel.

### Cooling System

4. Checking coolant levels are sufficient (if applicable).
5. Checking engine cooling intakes are open/clear.

### Electrical System

6. Checking safety lanyard is securely connected (if applicable).

### Starting Engine

7. Ensuring motor is in neutral.
8. Immediately prior to starting, ensuring that it is safe to start.
9. Starting the motor.

## Task 5 – Skipper advises a responsible person of the voyage plan

**Criteria:** Communicate by radio or other means, a voyage and vessel details to a responsible person by notifying them of:

1. Vessel name, registration number or call sign.
2. Departure time.
3. Departure location.
4. Destination.
5. Trip intentions.
6. Number of people on board.
7. Amount of fuel carried in litres.
8. Estimated time of return.

## Task 6 – The skipper safely departs a berth

**Criteria:** Safely depart a berth by demonstrating:

1. Checking that it is safe to perform the manoeuvre.
2. Allowing for the effects of wind/current.
3. Departing with little or no impact.
4. Not impeding other vessels.
5. Using appropriate engine revs.
6. Demonstrating smooth and timely use of gears.
7. Mooring lines are stowed/replaced/secured.

**Task 7 – Safely retrieve a simulated man overboard (MOB)**

**Criteria:** Demonstrate your competent manoeuvring of the vessel to retrieve a simulated MOB by:

1. Turning the vessel towards the simulated MOB.
2. Simulating the throwing of a flotation aid.
3. Ensuring a visual watch is maintained on the simulated MOB.
4. Completing turn so as to retrieve person from down wind/current.
5. Approaching at an appropriate speed.
6. Positioning the vessel down wind/current of simulated MOB.
7. Turning the engine off before retrieving simulated MOB.
8. Ensuring the simulated MOB is retrieved.

**Task 8 – Determine position by using navigational marks, transits and other landmarks**

**Criteria:** Demonstrate your ability to record and communicate the vessel's position using landmarks and navigational aids by:

1. Notifying the assessor of the two objects that align to form the transit used to fix the vessel's position.
2. Using the transit to steer a steady course for 30 seconds.

**Task 9 – Perform a controlled stop at approximately 5 knots**

**Criteria:** At a speed of approximately 5 knots, demonstrate your ability to safely stop the vessel within two boat lengths by:

1. Checking that it is safe to perform the controlled stop.
2. Shouting a relevant warning to the crew.
3. Reducing engine revs.
4. Engaging neutral gear.
5. Engaging reverse gear.
6. Using appropriate revs to stop the vessel.
7. Stopping the forward motion of the vessel within two boat lengths.

**Task 10 – Vessel is safely navigated and secured alongside a berth**

**Criteria:** Demonstrate your competent manoeuvring and securing of the vessel by:

1. Checking that it is safe to perform the manoeuvre.
2. Not impeding other vessels.
3. Selecting the appropriate side of the vessel to come alongside as a result of wind/current observations.
4. Approaching the berth at an appropriate speed.
5. Approaching the berth at an appropriate angle.
6. Demonstrating smooth and timely use of gears.
7. Using appropriate engine revs.
8. Arriving at the berth with little or no impact to vessel and structure.
9. Securing the vessel appropriately with mooring lines.

**Task 11 – Skipper advises a responsible person of safe return**

**Criteria:** Communicate by radio or other means the vessel's safe return by notifying of:

1. The vessel's name, registration number or call sign.
2. Advising the responsible person of the vessel's safe return.

**Answers to the Self Test Questions**

Rules and Regulations:	1-C,	2-C,	3-C,	4-C,	5-B,	6-B,	7-B,	8-A.	
Collision Avoidance:	1-B,	2-D,	3-C,	4-B,	5-A,	6-A,	7-D,	8-D	9-B.
Maintenance:	1-C,	2-D,	3-D,	4-A,	5-D,	6-B.			
Safety equipment:	1-A,	2-D,	3-B,	4-D,	5-A,	6-C,	7-B,	8-C,	9-A.
Trip Planning:	1-D,	2-C,	3-A,	4-A,	5-C,	6-D,	7-B,	8-A,	9-D.
Emergency Situations:	1-D,	2-D,	3-C,	4-C,	5-B,	6-D.			

## GLOSSARY

Getting the words right. Jargon is often used to obscure meaning and to make the user look more knowledgeable. In boating, jargon has always been used for the opposite reason, clarity. The right words pass a quick and clear message. There is a lot of marine jargon, but just having a working knowledge of it will be useful. Make yourself familiar with the glossary included in this workbook.

### **abaft**

Towards the rear of a ship or boat.

### **abeam**

At right angles to the centreline of the boat.

### **aft**

Towards the stern or behind the boat.

### **ahead**

Towards the bow or in front of the boat.

### **astern**

In the driving sense, to put the engine in reverse.

### **beam**

The width of the boat.

### **berth**

The place alongside a jetty or wharf where the boat is secured.

### **bilge**

The compartment at the bottom of the hull of a ship or boat where water collects so that it may be pumped out of the vessel at a later time.

### **bitts**

The piece of hardware on a boat's foredeck to secure a mooring line.

### **bollard**

The equivalent of bitts on a jetty or wharf.

### **bow**

The front of a boat.

### **bulkhead**

A boat's equivalent of a wall, separating compartments.

### **cabin**

A compartment for passengers or crew.

### **cable**

The line attached to an anchor. It may be all chain or a combination of chain and rope.

### **capsize**

To overturn a boat.

### **chine**

The intersection of the bottom and sides of a boat.

### **cleat**

A fitting to which lines are made fast.

### **current**

The horizontal movement of water, generally permanent or semi permanent. Currents caused by tidal movements are called tidal streams.

### **draught**

The depth of water a boat draws.

### **ebb**

A falling tide or the stream it makes.

### **fairway**

Any navigable channel.

### **fathom**

A distance of six feet (approx. two metres).

### **flood**

A rising tide or the stream it makes.

### **following sea**

A sea travelling in the same direction as the boat.

### **fore-and-aft**

In a line parallel to the keel.

### **freeboard**

The minimum vertical distance from the surface of the water to the gunwale.

### **give way**

Changing speed or direction to avoid another vessel.

### **give-way vessel**

The vessel required by the rules to get out of the way of another.

### **gunwale**

The upper edge of a boat's sides.

### **hatch**

An opening in a boat's deck fitted with a watertight cover.

### **headway**

The forward motion of a boat.

### **hull**

The main body of a vessel.

### **hypothermia**

A condition in which a person's core body temperature is dangerously low due to exposure to severe cold.

### **IALA**

The International Association of Lighthouse Authorities (IALA for short) is a non-profit organization founded in 1957 to collect and provide nautical expertise and advice.

### **inboard**

More toward the centre of a vessel.

### **isobar**

Line on a weather map joining places of equal air pressure.

### **keel**

The bottom of a boat's centreline.

### **king wave**

Unusually large wave made when a sea wave and swell peak at the same place.

### **knots (speed)**

A speed of one nautical mile per hour (about 1.8 kilometres per hour).

### **latitude**

The distance north or south of the equator measured and expressed in degrees.

### **leads**

Pairs of marks which, when lined up, indicate the centre of a channel.

### **lee**

The side sheltered from the wind.

### **lee shore**

The shore onto which the wind blows.

### **leeward**

Downwind side of your vessel.

### **leeway**

The sideways movement of the boat caused by wind.

### **longitude**

The distance in degrees east or west of the meridian at Greenwich, England.



**making way**

Vessel underway and moving through the water.

**midships**

Approximately in the location equally distant from the bow and stern.

**mooring**

An arrangement for securing a boat to a mooring buoy or a pier.

**nautical mile**

One nautical mile is equal to 1.151 statute mile or 1.852 kilometres

**neap tides**

Tides half way between full and new moons when there is the smallest rise and fall of tide.

**port side**

The left hand side of a boat looking forwards.

**protected waters**

The waters contained in any lake, river or estuary, or by any breakwater, but does not include the waters of Cambridge Gulf or Lake Argyle.

**PWC**

Personal watercraft (jetski).

**quarter**

The sides of a boat aft of amidships.

**rudder**

The underwater vertical plate that steers sailing craft and shaft driven power boats.

**rules of the road**

The international collision avoidance rules.

**running lights**

Lights required to be shown on boats underway between sunset and sunrise.

**sailing vessel**

A sailing vessel is only classified as a sailing vessel when propelled by sails only. A vessel under sails but propelled by engines is classed as a power-driven vessel.

**scope**

The ratio of length of anchor cable in use to the vertical distance from the bow to the bottom of the water.

**screw**

A boat's propeller.

**scuppers**

Drain holes in the sides above the deck .

**sea room**

A safe distance from the shore or other hazards.

**sea state**

The combination of wind, waves and swell.

**secure**

To make fast, to tie up.

**set**

Direction toward which the current is flowing.

**sidelight**

Lights to be shown at night when underway, showing an unbroken light over an arc of 112.5 degrees from right ahead to 22.5 degrees abaft the beam.

**sounding**

A measurement of the depth of water.

**spring tides**

Tides at new and full moons with the largest rise and fall of tide.

**squall**

A sudden, violent wind often accompanied by rain.

**stand on**

To continue on the same course and speed.

**stand-on vessel**

The boat that has right-of-way when meeting another boat.

**starboard side**

The right side of a boat looking forwards.

**stem**

Where the sides of a boat meet at the bow.

**stem the tide**

Go forward against the current.

**stern**

The back of a boat.

**swell waves**

The regular longer period waves that are generated by the winds of distant weather systems.

**telltale**

The stream of water from an outboard motor indicating that cooling water is circulating.

**tidal range**

The difference in height of water between high and low tides.

**tide**

Rise and fall of the sea caused by the gravitational pull of the sun and moon.

**tiller**

A bar or handle for turning a boat's rudder or an outboard motor.

**transom**

The stern of a square-sterned boat.

**transit**

A transit occurs when a navigator observes two fixed reference points that are in line with the navigator. This creates a position line.

**trim**

Fore and aft balance of a boat.

**underway**

Not at anchor or made fast to the shore or ground; if you are drifting you are underway.

**unprotected waters**

All waters other than the waters contained in any lake, river or estuary, or by any breakwater, but includes the waters of Cambridge Gulf and Lake Argyle.

**wake**

Trail of water disturbance left by a moving vessel.

**wash**

The water disturbance which causes damage, injury or annoyance to others and which is created as a boat moves through the water.

**wave height**

The vertical distance between the top of the crest and bottom of trough.

**way**

Movement of a ship through the water such as headway, sternway or leeway.

**windward**

Toward the direction from which the wind is coming.

**yaw**

To deviate temporarily off course, as when running with a quartering sea.

**Letter of Consent**

If you're under 18, you must have a letter of consent signed by your parent or legal guardian prior to assessment.

**Pro Forma Letter of Consent****Director General**

Department of Transport

I hereby consent that \_\_\_\_\_  
*Family Name* *Other Names*

Who resides at No. \_\_\_\_\_ Street \_\_\_\_\_ Suburb \_\_\_\_\_

May be issued with a Recreational Skipper's Ticket.

I declare that I am the legal ☐ FATHER ☐ MOTHER ☐ LEGAL GUARDIAN  
of the above-mentioned person. *(Please tick the appropriate box).*

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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My Recreational Skipper's Ticket assesment was conducted by:

Authorised Provider details:

Authorised Assessor details:

Date of assessment:

Certificate Number:

Phone:

Email:

## Contact

Recreational Skipper's Ticket  
Marine Safety Business Unit  
Department of Transport

1 Essex Street  
Fremantle 6160

Western Australia

Marine Safety Hotline: 1300 863 308

Email: [marine.safety@transport.wa.gov.au](mailto:marine.safety@transport.wa.gov.au)

Website: [www.transport.wa.gov.au/imarine](http://www.transport.wa.gov.au/imarine)

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